Local
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LANDSCAPE STUDY OF THE ISLAND OF CRES

Local Development Pilot Project
ISLAND OF CRES

LOCAL DEVELOPMENT PILOT PROJECT "ISLAND OF CRES"

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1. INTRODUCTION

Experimental landscape study of the island of Cres was initiated within the Local Development Pilot Project (LDPP), a programme implemented by the Council of Europe and coordinated by the Ministry of Culture of the Republic of Croatia. The idea of the study was to encourage cooperation between various experts and stakeholders in assessing landscapes of the island of Cres, with great focus on planning, protection and landscape management in general, because this topic is not institutionalized in Croatia. The coordination team (experts from different institutions and private studios and a consultant from the Council of Europe) and the executive team (students and landscape architects guided by interdisciplinary mentoring team) joined forces and conducted a one-year study based on the model that unified approaches of French and Croatian school of landscape architecture, as well as geographic, architectural and ethnographic approach in landscape analysis and assessment.

The study reflects the principles of the Council of Europe's **two conventions**: Framework Convention on the value of the cultural heritage for society and the European Landscape Convention. Those principles indicate that a certain space should be recognized as an expression of the diversity of a shared cultural and natural heritage. Furthermore, allowing public and transparent insight into characteristics, values and potentials of the area, should encourage the activation of the local community with regards to inherited territory preservation. The Council of Europe promotes landscape as an integral concept through which the area is analysed and presented. Tools used in evaluation are basic elements in identifying, developing and preserving landscape. These are the reasons why **landscape is recognised as a valuable resource and one of the main starting points for future development - which is why this study was implemented in the first place.**

The island of Cres is standing before many challenges. On one hand, there is the prevailing abandonment of agricultural activities and leaving most of the territory subject to natural processes. Arable land has never had smaller surface, and animal husbandry is growing more extensive, which causes afforestation of pastoral valleys. On the other hand, there are developmental challenges and spatial pressures caused by touristic activities. Although it has not reached such extent as in the rest of coastal Croatia, urban zone of Cres and some natural sites are in the first stage of transformation under the influence of the new construction. These changes still have not completely modified the landscape, function and the overall image of Cres, but they are an introduction to **visible tendencies of interruption in continuity and breaking with the past, i.e. with the knowledge and practices that were developed through millennial cultivation of the island landscape. Changes of the landscape are inevitable and necessary, but must be well contemplated and directed in a way that spatial continuity is provided**. Deciphering of the processes and factors that conditioned historical use and management of the landscape should be the lesson for future landscape management.

This paper contemplates and represents the landscape of the island Cres. All the landscapes and landscape characteristics are depicted and represented, including the natural and social factors that formed them, as well as social associations and preferences of the landscape. Preserved nature in a form of seashores, Lake Vrana, dense forest vegetation, diversity of geomorphologic forms that influenced land use organization logic, preserved historical settlements, rich architectural heritage, complex dry stone wall structures of pastures and cultivable lots, remains of rare communal techniques of forest and pasture management, unwritten history, meanings and ties that the society has towards landscape, new spatial interventions, are only some of the recognized and described features within this landscape study.

1.1. Aims and scope

The main objective of this study is to **elaborate guidelines for preservation and development of the landscape of the island of Cres, within the LDPP development strategy**. This entails exploring specificities and condition of the Cres landscape, with focus on the qualities that should contribute to its attractiveness and competitiveness. Landscape study of the island of Cres can allow articulation and elaboration of the landscape role in long-term policies of island development. Study does not provide a final solution for landscape questions; it is meant to serve as a platform for encouraging dialogue between different stakeholders that should find interest in development and preservation of Cres landscape (experts, public institutions, government bodies, etc.), and to demonstrate innovative methods and principles of research. This study should be perceived as a

beginning of systematic approach to landscape study of Cres, entailing active participation of experts in spatial planning, protection of cultural heritage, protection of nature and environment, rural development, etc. Furthermore, it should also be used for the purposes of popularization of landscape, within the local community, and methodologically as an example for other units of local administration and other areas that wish to assess and record its landscape. Described activities and ideas represent a direct implementation of the principles of the European Landscape Convention. In summary, objectives of the landscape study of the island of Cres were to:

- create a multi-disciplinary approach to landscape interpretation by incorporating different experts;
- detect and map all landscape areas and describe their characteristics, condition, trends and problems;
- research social preferences and forms of social representation of the landscape within the local community, tourists and experts;
- evaluate qualities and sensitivity of the landscape;
- present identified landscapes through recognizable "visual language";
- provide guidelines for implementation of this study within the island development strategy and for preservation and development of all determined landscapes.

1.2. Methods and procedures

European Landscape Convention states that: **"Landscape means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors."** This definition implies diversity and subjectivity of perspectives regarding landscape, and the fact that the concept of landscape is not final. In the context of different perspectives, this study generates the idea of combined approach to landscape assessment; in addition to regular procedure, it incorporates ethnologic and visual/artistic interpretations. Ethnographic research provides insight into history, memories, social associations and landscape preferences, while visual/artistic approach contributes to analytic contemplation and clarification of spatial identity and, finally, presentation of visual, perceptive and associative characteristics of landscape. Interdisciplinary approach used in this study encourages equality and dialogue between different professions involved in landscape research. Methods and procedures combined desk research and fieldwork. Desk research involved collecting and analysing cartographic and written sources, photographs and other relevant data, using GIS techniques, as well as "hand drawing" analysis and presentation. Field research involved two field visits (7 days total). The study was conducted by a student and young landscape architects guided by four mentors (a geographer, a landscape architect, an architect-visual artist, an ethnologist). The central procedure is based on landscape character assessment and it implies distinct, recognizable and consistent combination of elements that make each landscape distinctive. In addition to elements stated in commonly accepted landscape character assessment definition (Swanwick, 2002), which include relief, geology, soil, land use, vegetation, field and settlement patterns, this study also includes history, landscape memory, traditional practices, and associative aspects, social and artistic representations. The first step in landscape character assessment is a synthetic analysis of numerous cartographic, spatial, and written data (combining GIS and sketch mapping), and comprises classification and mapping of landscape areas on two levels; **higher level implies landscape units, and lower level landscape areas**. The process of detecting landscape units was based on combination of relief forms, geology, soils and land cover, while landscape areas are based on combination of relief forms on a more precise level, historical and current land use patterns and, traditional practises, etc. Initial boundaries of separate areas were discussed and corrected throughout the study, and were defined by insights revealed during field and ethnographic research and visual interpretation.

In the context of **ethnologic interpretation**, tripartite model of research includes: a) ethnographic research and recording b) comparison and c) contextualization. Insisting on a qualitative method of semi-structured interviews with the local community, life stories, unofficial and unwritten history of the island, personal and collective memories were recorded. The main objective was to understand value systems, meanings and connections that the local community built towards landscape through generations (years, decades, centuries). In this perspective, landscape is explained as a political, economic, historical and emotionally created and evaluated heterogeneous space of material and non-material values. The research of synchronous - concurrent and parallel - stratifies live, ambiguous and dynamic anthropogenic spaces and underlines the unavoidable bottom-up element in landscape assessment: importance of feelings, experiences, opinions, visions and initiatives of the local community.

Artistic interpretation in the aspect of analytical reflections on landscape uses different methods of abstractions in order to articulate visually perceptive elements of singular landscapes. Observing the space through primarily perceptive, free and expressive media completes but also disintegrates and questions accuracy of precise, technologically provided factographic methods. Alternative perceptive tools enhance the fact that landscape is greatly observed and explained through subjective and intuitive aspects. Specifically, quick terrain sketch (croquis) was the main tool of analytical and visual data collecting, as a means of achieving direct contact with the landscape, but also of completing and questioning the photographic approach. On the other hand, for the purposes of landscape presentation and analytical maps, techniques of detailed block diagram sketches were applied, used in analysis of all landscape areas. A less abstract isometric projection method was used in presentation. Synthesis of experiences was conducted through making 'sensitive' maps of landscape units where the main characteristics were presented in the form of dominant combinations of present structures – dry stone walls - as a key of understanding landscape use and its natural specificities. For the purposes of interpretation, features like texture, colour, transparency, and spatial and linear distribution of elements were used.

Upon collection of all the data, each landscape area was described and classified, followed by landscape evaluation, i.e. trends, problems and sensitivity analysis. Sensitivity of the landscape character implies assessment of the capacity of the landscape character for the changes caused by development (new interventions and changes of use and land characteristics) but also by abandonment (natural processes). This method implies overlapping of three different value systems (cultural, natural and visual) and a problem map. The problem map is an estimate of spatial problems and trends, based on gathering insights deriving from description of landscape areas, estimating a degree of succession of natural vegetation, preservation of rural complexes and settlements, and determining characters of new spatial interventions. The results include recommendations for planning and management of Cres landscapes, and are illustrated by a map of guidelines for landscape management.

2. FACTORS FORMING THE LANDSCAPE OF THE ISLAND OF CRES

Island Cres – cultural landscape masked by natural landscape

If we accept the premise that the present landscape image represents its previous characteristics as well, it is necessary to begin by analysing its formation. Numerous and extended factors imply interaction of natural components and social processes. It is important to understand that despite the fact that these characteristics are grouped and distinguished in the following text, they should not be considered as isolated features or as a simple inventory, but as a connected causal sequence of events leading to the present landscape image of the island of Cres.

2.1. NATURAL FEATURES

2.1.1. Geographic position and location, shape and size

The island of Cres is located in Kvarner bay and it is the northernmost island in the Adriatic aquatorium. It administratively belongs to the Primorje-Gorski Kotar County and two towns, the Town of Cres and the Town of Mali Lošinj. As a part of the Cres-Lošinj archipelago, it is situated between the east coast of Istria and eastern Kvarner islands (Krk, Rab and Pag) and the island of Lošinj in the south. The distance between the northernmost point of the island (cape Jablanac 45°11' N) and the southernmost point (cape Suha Punta, 44°36' N) is 65 km. The westernmost point is the cape Prestenice (14°16' E) and the easternmost cape St. Damjan (14°33' E). With the overall surface of 405,7 km^2 it is the biggest island in the Adriatic Sea. The island's width is averagely 30 km, while its narrowest part, at the pass Križić, is only 2-3 km wide. Despite the fact that Cres stands out among other Adriatic islands because of its NNW-SSE meridian direction, some parts of the island, especially northern and southern, follow Dinaric direction (NW-SE). That defines Cres as a part of the arc bending from the meridian direction of the mountain Učka towards the Dinaric direction of northern Dalmatian islands (Slukan, 1992). In comparison to other islands, Cres is the biggest (larger by half a square kilometre than Krk), the second longest (after Hvar) and the second highest (after Brač) island in the Adriatic Sea.

2.1.2. Geological formation and geomorphological characteristics

The island of Cres is characterised by undulating ridge descending towards south. **It was formed by tectonic activity (early Pleistocene) that elevated parts of carbonate surface (carbonate rocks), which were additionally shaped by karst and fluviokarst processes[1] (differential erosion and corrosion[2]).** The coastlines that delimit Cres, defining it as an island, are the result of sea level rise after the end of glaciation. Depths of the Cres aquatorium do not exceed 100 meters. That indicates that even in the recent past, this island was a part of the mainland, but after the last major glaciation (10 000 years ago) sea transgression separated it from the mainland. Consequently, the island of Cres, as well as other accompanying islands, are actually **surfaced remains of relief elevations, i.e., a continuation of the mountain ridge of Učka.** This explains why this island's relief, hydrology, vegetation, soil and geology are similar to the mainland's.

Karst is formed from the dissolution of soluble rocks. The geological structure of the insular area is dominated by sedimentary rocks, soluble **carbonates: cretaceous limestones and dolomites** of various types and resistance, which have, through the processes of erosion and denudation, significantly affected the creation of today's relief (Stražičić, 1981). Compact and clean limestone can be recognized in a form of craggy ridges. The two most distinguished cover the stretch from Niska to Barbin (north part of the island) and the stretch on the Pernat peninsula from Grabrovica to Helm (west part). Sinkholes are formed due to strong erosion and the mixture of limestone and dolomite. Bigger dolomite depressions have been the factors of development for the town of Cres, village Martinšćica and Lake Vrana. There are also deposits of bauxite, which are not in layers but in the form of irregularly shaped "pockets". The overall appearance of the island (land use, relief formations, location of the settlements, appearance and vegetation cover) can be explained by the geology of the area and the combination of two types of carbonate minerals.

Coasts of the island of Cres are relatively young. The coastal relief forms of the island follow the insular relief. Abrasive action has had a relatively small impact on the transformation of the island's coast, due to resistance of carbonates to mechanical erosion. The northern part of the island is higher, steeper and with slightly indented shore, while the southern has lower and more indented coast. Despite the tectonic predisposition of the steep coasts, it is believed that their exposure to destructive force of the waves (generated by strong winds, primarily *bora*) have contributed to the formation of coastal cliffs. They can be found on the north coast of the island, between capes Jablanac and Grota, which are exposed to "Bakar bora" and below Orlec, which is exposed to "Senj bora". In many bays gravel beaches or coastal plains (south side of the Cres harbour) have been created by the accumulation formed from torrential flows from adjacent slopes.

The main surface forms are **sinkholes**. Due to its scaly structure, longitudinal faults, craggy composition and intense corrosion, this island has a good foundation for the formation of sinkholes. Carbonates formed both surface and underground relief forms. On the whole island of Cres 42 speleological phenomena have been revealed so far (Buzjak, 1997).

2.1.3. Hydrological characteristics

The porosity of karst, unevenly distributed precipitation and frequent summer droughts are reflected in the **general dryness of the island**, so there is no possibility for water retention in means of rivers. There are only **torrents -** streams that occur during heavy rains, carrying big rocks. They are hydrologically insignificant, but because of the large force they gain, they can create ravines on slopes ending in gravel beaches. Torrents in the southern part of the island are not so prominent because of the flatness of the area. Different processes are characteristic for this area - on a gentle slope southeast of Osor postglacial elevation turned valleys containing brackish water into five shallow "lakes" of saline. There are several **sources of drinking water (wells)**, but the most important and the most abundant one is located in Piskel (south part of the Cres valley) around which, due to brackish water, a small wetland micro-location was formed. There are another fifteen sources on the island. Watertight sinkholes are a natural precondition for creation of puddles that were

1 Fluviokarst is one of morphogenetic relief types, and implies a complex of geomorphologic processes: corrosion, fluvial erosion and slope processes.

2 Geomorphologic process of dissolving rock in water is called corrosion.

also used as a source of water, especially for livestock. **Lake Vrana** gives balance to the general aridity on the island of Cres. It is essential for today's life on the two biggest islands of the archipelago. It has been supplying the population with drinking water since 1946, when the water system was starting to build. The lake is the largest cryptodepression in Croatia with global scientific significance. Accumulation of water in such large quantities is possible primarily because of its morphology (dolomites) and tectonic factors. Lake water pressure, which is higher than the pressure of the surrounding sea, prevents seawater from penetrating. Although its volume is significant, oscillations during touristic season endanger its underground aquifer (Tandarić, 2014). Today, research shows that the lake is autochthonous, i.e. it is not connected to mainland resources of water.

2.1.4. Climate

Climate of the island is **conditioned by its geographic location, arrangement of the surrounding land, configuration and the surface of the island itself and the influence of the surrounding sea.** Due to its geographic location on 45th parallel north, Cres is defined by moderately warm rainy climate (class C according to Köppen climate classification). According to the last standard reference period in Croatia (1961 - 1990), Cres is characterized by two climatic types: south of village Vodice by Cfa type, moderately warm humid climate with hot summer (the warmest month average temperature ≥ 22°C) and the north part by Cfb, moderately warm humid climate with warm summer (the warmest month average temperature is below 22°C) (Šegota and Filipčić, 1996). Although there are disagreements connected to accuracy of the terms, the types are commonly referred to as Sub-Mediterranean and Mediterranean climate[3]. Advocates of this terminology argue that the island predominantly belongs to Mediterranean climate (covering the area of Cfa) and to Sub-Mediterranean, mostly present in the northern part of the island. Independent of the terminology, characteristics of the seasons are as follows: **hot and mainly dry summers, mild temperatures, but windy and rainy (occasionally snowy) winters**. Change of seasons brings variable weather and rain, with springs mostly colder than autumn, due to maritime influence during winter season.

Due to its geographic location (compared to the surrounding mainland), Cres is influenced by the **collision of Mediterranean and continental climate influences**. That exposure creates convective rain during summer (that's why there are no extremely dry periods characteristic for Mediterranean climate) and penetration of cold air masses during winter, resulting in occasional snow (mostly on the north part of the island).

Position of the island creates diversity in **wind exposure**. It is a constant climatic element that has a great impact on lives of islanders, and a secondary influence on landscape formation. It is represented by northeastern and middle-eastern steep and bare coasts, mainly without settlements. At the same time, the west coast is partially protected due to already mentioned relief relations - high central ridge that blocks continental influence. The south part of the island is sheltered from *bora*, but it is more exposed to maritime influence. Other significant winds for people and vegetation are *sirocco* and *mistral*. *Sirocco* (southern) is the wind that creates cloudy weather with heavy rains. *Mistral* is a wind that occurs because of uneven heating of land and sea and brings a fresh breeze from the west during summer. Climate diversity is even more enhanced by the island configuration. **Considerable elongation of the island in N-S direction (65 km long) has divided the island into northern Cfb and southern Cfa class, and it has directly influenced its vegetation cover.** Significantly wide central extension decreased maritime influence in areas where total temperature difference is 35 °C. Climate has a great impact on landscape because it enables existence and distribution of vegetation habitats, as well as the most significant type of managing - extensive sheep breeding, that would barely exist without the norm of 200 bright days a year, and 260 days with average temperature above 10°C.

2.1.5. Soil types

Climatic conditions and petrographic (stone) composition closely correlate with the layout of soil types and biodiversity of vegetation cover. In accordance with mainly limestone minerals, this area is **dominated by skeletal soils – rockery that is not suitable for cultivation** (Stražičić, 1981). They are sporadically sterile and completely without vegetation (depending on the proportion of rock base and loose soil in the fissures). Still, predominantly productive rockery is overgrown with macchia and plants that sheep do not graze (sage, milkweed, immortelle, etc.). **Red soil** (Terra rossa) is related to the limestone rocky ground and is widespread along the entire island. It is cultivable and it is mostly found within sinkholes. Red soil is the most valuable because it easily absorbs and retains water for a long time, which allows plants to survive during the dry, hot and long Mediterranean summer. With some humus, it is usually washed and accumulated in lower regions and karst depressions. However, there are not many large karst depressions in the form of fields. **Areas of coastal brown soil** cover most of the northern part of the island and are suitable for forests of oak and hornbeam.

Dolomite soils are predominant in the central part of the island. Erosion of dolomite rocks created them. These sandy soils are suitable for the growth of natural vegetation and for cultivation. Numerous valleys were traditionally characterised by vineyards. In the absence of flat cultivable land, early farmers had to use terracing method to retain shallow, slightly arable soils on dolomite slopes. **Soils of the terraces are therefore largely anthropomorphic**. Delluvial soils were formed by the recent deposition of erosive material from the torrents. They have mainly been used for vineyards (share of rubble is greater than 50% so cultivation is not profitable). **Wetlands and hydrogenic soils that are overgrown with reed** can also be found in some areas, mostly in the south part of the Cres valley, slopes of Lake Vrana and cape Tarej, as well as the edges of salt marshes, but since they are constantly under the sea, they cannot be used for cultivation.

2.1.6. Vegetation zones and biodiversity

Current appearance of the island's vegetation cover is conditioned by:

1. Considerable elongation of the island in N-S direction,
2. Difference between high northern and low southern part of the island,
3. The island's position in relation to the neighbouring mainland,
4. Different exposure of the coast to *bora* and
5. Millennial anthropogenic impact.

Before humans substantially changed the appearance of the vegetation cover, the whole island was covered with oak forests (Stražičić, 1981). With deforestation, animal husbandry was of special importance. It led to **degradation of the original forest cover and almost complete devastation of the central part of the island**.

The forests have remained only in several places but big areas of rockery, used for sheep grazing, mainly replaced them. **Seemingly barren pastures and rockeries actually hide quite rich and endemic flora** (Jurkota-Rebrović, 2009). In total, around 50% of the island of Cres is covered by dry grasslands and rockeries. They are mainly used extensively - without artificial fertilizers and chemical compounds - and are therefore characterized by significant biodiversity. Right

3 In order to avoid ambiguity, these terms will be used throughout the study.

here on these rockeries a flora with approximately 1400 plant species has been developed (Sušić, 2000). The island is specific for its large number of endemic and relict species. Due to microclimatic variety of its northern and southern areas and its eastern and western coasts, two vegetation zones can be differentiated:

1. Sub-Mediterranean
2. Mediterranean

Sub-Mediterranean zone is in climatic terms distinguished by lower temperatures in the winter and a greater quantity of precipitation. The result of such climate is a brief period of summer draughts and a break of vegetation during the winter. Vegetation of the Sub-Mediterranean zone in the lower vegetation belt (up to 250-300 masl) is characterized by a natural thermophile deciduous forest of downy oak trees (*Quercus pubescens*) and oriental hornbeams (*Carpinus orientalis*). Higher vegetation belt (above 250-300 masl) is characterized by forests of downy oak and hop hornbeams (*Ostrya carpinifolia*). The stretch from the north part of Cres to the top of the ridge Gorice belongs to the Sub-Mediterranean zone. Imaginary horizontal line pulled from the beach St. Blaž (west coast), over the top Gorice to the village Merag (east coast) represents the border between the two zones and is one of the strongest occurrences in Europe, when observed from physiognomic and ecological aspect (Mavrović, 2011). That is why it represents the line between the Mediterranean and the Euro-Siberian region (Avakumović, 2004). **Mediterranean zone** covers central and southern part of Cres. The vegetation cover consists of evergreen holm oak forests (*Quercus ilex*). Currently, they are mainly destroyed and replaced with different types of vegetation – *macchia*, *garrigue* and rocky pastures. In the central part of the island, there are plantations of maritime pine trees (*Pinus Pinaster*) and black pine trees (*Pinus Nigra*). On most western maritime slopes, the land is cultivated with olive groves. The southeastern part of the island is covered with Mediterranean macchia consisting of holm oak, strawberry trees (*Arbutus Unedo*), hollies (poisonous, *Ilex Aquifolium*), common junipers (*Juniperus oxycedrus*), myrtles (*Myrtus Communis*) and bay laurels (*Laurus Nobilis*).

2.2. ANTHROPOGENIC IMPACT

Human presence is not only revealed in territorial structure, but in the perception of the landscape, as well. Although covered in vegetation, landscape of Cres retells a story of a man in unity with nature and against it. In the following text, anthropogenic influence is analysed through these features:

- Importance of island demography,
- Valorisation of landscape through history,
- Landscape management today,
- Areas valuable for protection,
- Perception of the island in the eyes of the public.

2.2.1. Landscape reflections of historical political circumstances

The island of Cres is characterized by a long continuity of inhabitation. Although cultural remains from the Palaeolithic and Neolithic Ages are historically significant, they do not help to explain the present landscape image of the island. On the other hand, numerous hill forts that are situated on the highest points of the ridge, and other establishments from the Bronze and Iron Ages - usually in the central part of the island and some significant coastal points - do not only show the agricultural and marine orientation of the former Illyrian-Liburnian population, but also explain the creation of the current landscape. They started the process of deforestation and established today's **most important historic settlements: Beli, Cres, Lubenice and Osor**. During the Roman rule (the 1st century), some of the hill forts became urban centres where traditional animal husbandry and agriculture became the base of livelihood, and the core of island economy to date. Upon immigration in the 7th century, Croats established their settlements in the central parts of the island. As their main activity was agriculture, they were searching for cultivable lands, which explains why many, mostly abandoned villages have Croatian names (e.g. Filozići, Dragozetići, Predošćica, Belej, Vodice…). Since the 11th century, the Venetian Republic tried, and partly succeeded in establishing a rule in these lands. Venetian administration established a feudal relationship and started a **systematic dry stone wall subdivision of the area**. Such management remained even during the Austrian rule (1814–1914) and in the period of Italian annexation, until 1945. Under these circumstances, a majority of the population had to work for aristocratic families within shepherds' dwellings. It is assumed that the origin of shepherds' dwellings can be traced back to the Middle Ages. Upon annexation of the island to Yugoslavia and nationalization, families that were liberated from feudal relations, abandoned these dwellings by 1960s (Jurkota-Rebrović, 2009), and sheep breeding became a secondary source of economic activity. The viticulture crisis and two World Wars increased emigration **in the early 20th century, leaving the island drastically depopulated**. Today the island has a whole spectrum of elements of the original architecture which indicate that there has been a bigger population oriented primarily to animal husbandry, agriculture and fishing. These elements represent Cres as ethnologic landscape, i.e. **the landscape of traditional skills.**

2.2.2. Elements and specificities of traditional sheep breeding

There are around thirty villages on the island, but only **one urban centre - the town of Cres** and it has survived general depopulation. Other villages mainly preserved their traditional character - they are usually fortified and gathered while the shepherds' dwellings are scattered. In uninhabited, open areas, there are **several hundred abandoned chapels, shepherds' dwellings, villages, hamlets and neglected pastures fenced by millennial dry stone walls.** Smaller anthropogenic elements like wooden latticed gates (*lese*), cisterns (šterne), puddles and numerous forms made out of stone including dry stone walls (*gromače*), big prismatic stones used for reposal (*pocivalici*), stone heaps (*menjici*), dry stone walls terraces *(barbakani)* and sheepfolds (*mergari/strgari)* (image 1), also belong to traditional architecture.

These elements prove that the millennial human impact on nature had minimal negative consequences. They **teach us about the old vanishing agricultural ways, local materials and architectural experience passed down from one generation to another** (Duić-Kowalsky, 1997).

Without the context of the landscape they belong to, it is difficult to understand all of these forms: why they are located in certain places and what their relation to other elements is.

Image 1. Antropogenic elements of sheep breeding tradition (shepherd's dwelling, wooden traditional fence, dry stone wall, chapel, pond)

During the 12th century, when the process of feudalisation of the island was completed, the organization of the island was determined by systematic subdivision with dry stone walls. **Dry stone walls represent the most prominent element of the rural anthropogenic heritage of the island**. The walls differ in shape, height and purpose. The purpose is essentially one: to facilitate or enable agricultural activities. The most representative example can be found around the town of Cres. New dry stone walls would be made when the land had to be divided between sons or sold. On the west side of the island (around Grabrovica) and on the east side (around Belej and Orlec) the walls were tall (sometimes taller than people) in order to protect the land and sheep from strong winds (*bora*). Where there was no flat arable land, shallow soils on limestone and dolomite slopes were used. These arable terrains were cleared of stone debris, which was gathered in long stone piles and placed down the slope. Today they are still one of the most significant landscape elements around the town of Cres. The precipitation brought loose soil down the slope, so the lower zones are more fertile than the higher ones. When the vineyards and olive groves spread, many dry stone wall terraces - *barbakani* were built. Such terraces cover all the slopes around Cres bay. ***Komunade*** or "communal pastures" were used for sheep grazing by families who did not own enough land, and by shepherds that saved their private pastures for winter periods, and used communal for summer grazing. Use of these pastures implied obligation of maintenance that included repairing demolished dry stone walls, clearing puddles and sheep shearing. It is manifested in the space as a bare and "unstructured" pasture, i.e. pasture without inner regular parcellation. Dry stone walls within communal pastures mainly enclose spacious irregular parcels to divide them from neighbouring managed pastures (managed rotational intensive grazing grounds) or divide communal pastures belonging to different administrations, or fence small karst holes and puddles within the pasture. Characteristic adjoining elements of communal pastures are sheepfolds (*mrgari)* and communal puddles, depicting representative examples of architectural heritage. Accumulation of debris fills up the fissures inside sinkholes and creates waterproof surface that consequently turns into a puddle. Recreating the natural process, inhabitants created ponds. Ponds that were used by people are mostly near settlements and are fenced to prevent access to livestock, and the other ones, for livestock, were usually placed inside communal pastures or on the border of several pastures so that more owners could use them. Rights to use these ponds are called '*diriti*' (Mavrović, 2011).

Apart from architectural heritage, which is a direct or indirect result of animal husbandry and agricultural activities, even more significant consequence of long-term livestock grazing is the change of vegetation cover. Degradation of vegetation cover on karst lands is a historic process and a result of intensive vegetation exploitation and free grazing. Relatively mild climate and slightly hilly terrain shaped **extensive sheep breeding** - sheep grazing without constant supervision in the open, all year round. Moving sheep from one field to another enabled pasture regeneration. Thick forest cover existed only in areas (the north and the south part of the island) where there were restrictions by the government or the landowner. This means that the rockeries (in the central part of the island) are a physiognomic term instead of a floristic term and were always of a secondary origin. The **changes in vegetation are therefore of anthropogenic origin, direct and indirect, constructive and destructive**. Recent changes (approximately in the last hundred years) affect a reversible process – landscapes enter a second phase of natural succession. The direct influence refers to activities related to animal husbandry and forest management, which include intentional afforestation, controlled release of cattle in the forest (grazing) and tree topping (*pedalenje)*. *Pedalenje* is a tree topping practice within the system of open pastures. The term derives from word "*pedal*", describing trees with thick trunk, knotty and wide crown, because of controlled, periodical (every 10 -15 years) removal of its branches 2-4 m above ground. Branches were used as firewood, and the land around the barren trunk was soon overgrown by grass for sheep grazing (PPPPO Tramuntana, 2003). Indirectly, due to depopulation and abandonment of traditional cattle breeding, the pastures were subject to natural succession (*Juniper oxycedrus L.*) and are not in the form of bare rocks. Vineyards, terraces of olive groves and cultivated fields lose their previous function (image 2). Landscape is changing and biodiversity is decreasing.

Image 2. Agricultural use of the surroundings of the town of Cres in the early 20th century (before the vegetation succession)
Source: Old postcards

2.2.3. Recent history and current changes

Current changes of anthropogenic landscape mainly refer to construction activities. The most significant interventions in the last 20 years were the construction of the Cres marina, realization of water supply in Valun, extension of the main road D100, construction of a wastewater treatment plant, expansion of the urban part of the town of Cres towards north (construction of the industrial zone Volnik) and apartmanization of the residential part. There are no big production zones on the island. In economic terms, there are only business zones (trade, smaller manufacturing plants – crafts, storage, services, utilities etc.) but the biggest share goes to tourism and hospitality zones. The town of Cres is the only settlement that shows urban appearance along with few historic towns, which gained a special urban-rural character (Osor, Beli, Lubenice). Other settlements and villages have mostly rural characteristics. **All these changes do not make a drastic shift in developmental or aesthetic terms. The island still keeps a high level of preservation of natural and cultivated landscape.**

2.2.4. Traffic connections and traditional routes

The main state road D100 defines traffic connections on the island of Cres. It extends in the north-south direction, from Porozine to Osor (58.1 km long) and continues to Mali Lošinj. D100 is connected to the ferry dock Merag (on the east coast) with the road D101. Most of the villages are connected to island's main road by regional and local roads. Those roads are narrow and surrounded by dry stone walls, with occasional extensions that facilitate bypassing of cars. Such roads are extensions to Beli, Lubenice and Punta

Križa. On the island, there is a network of walking trails, forest, field and olive groves paths. They are all visible on old Austro-Hungarian maps (image 3). Few old paths have been converted into educational eco-trails, as in the southeastern Tramuntana plateau and Pernat peninsula. Traditional paths which connect the villages are usually passable, marked and represent recreational zones.

2.2.5. Protected areas

An inventory of protected areas and those suggested for protection can serve as an indication of areas with high sensitivity, although the whole island can fall within that category for the following reasons:

- **Sensitivity caused by porosity and permeability of the karst terrain,**
- **The whole island is protected by Natura 2000,**
- **Nearly whole population is supplied by the water from one lake.**

According to the spatial development plans (SDP) of the Town of Cres and the Town of Mali Lošinj, an **oak tree in Sveti Petar** (Tramuntana) is protected by decision on protection as a natural monument. **Areas along the shoreline Fojiška – Pod Predošćica and Mali Bok – Koromačno are protected by the decision on protection as a special reservation – ornithological**. The whole island falls within the Natura 2000 ecological network. Lubenice is on the waiting list for inclusion in the UNESCO's World Heritage List. According to the same reference documents (SDP), certain natural areas are proposed for protection. Considerations for special reservations were given to:

- Salt marshes of Osor, as a special reservation of regional botanic and zoological (herpetological) significance,
- Extension of the existing ornithological reservations, as special reservations of botanical and zoological significance,
- Lake Vrana as a special reservation,
- Forests of Tramuntana, as a special reservation of botanical and zoological significance,
- Forests of sweet chestnut in Tramuntana area, as a special reservation of forest vegetation,
- Forests of Punta Križa, as a special reservation of forest vegetation.

Considerations for protection of significant landscape (formerly protected landscape) were given to saddle between peaks Sis and Barbin and area around Lubenice.

Considerations for protection of natural monuments were given to:

- Lipica pit (Dragozetići) – national significance,
- Kus pit (Vrana) – regional significance,
- Čampari pit – national significance,
- All bigger puddles.

According to the Act on the protection and preservation of cultural goods, some areas belong to the category of protected cultural goods. These areas are urban complexes (Cres, Beli, Lubenice and Osor), rural complexes (Predošćica and Orlec) and shepherds' dwelling Batajna, while shepherds' dwelling Grabrovica used to be under preventive protection. Furthermore, there are protected archaeological sites and zones, as well as separate buildings and complexes.

2.2.6. Island of Cres in the eyes of the public

There are several categories within which we can position the island of Cres, when we refer to its public presentation:

a) Formal education,
b) Tourism branding,
c) Gastronomic heritage,
d) Frequent relations to the island group under administrative jurisdiction of the Town of Mali Lošinj.

Educational context refers to the perception of island created at the beginning of formal education in the Republic of Croatia. By 2005, almost every student "knew" that Cres is the second largest island, and after the results of hydrographical survey in 2005, that it is the biggest Adriatic island. Likewise, schools incorporated the topic of griffon vultures as endangered species and Eco-Centre Beli in charge of their protection, into their curriculum. Other nationally relevant interesting sites include Lake Vrana as a natural reservoir of drinking water, village Lubenice as a hill fort located on a cliff and a cultural historical monument.

As an integral part of the Mediterranean, the island of Cres is frequently mentioned in the context of Mediterranean gastronomy and **Cres sheep, extra virgin olive oil and numerous culinary, aromatic and medicinal herbs** are often a part of various social and gastro-touristic events. Traditional vine cultivation is also sometimes mentioned, but it was completely abandoned in the second half of the 20th century. All these products are a result of specific biological and landscape diversity that is promoted in many touristic publications and newspaper articles on tourism. Reporters often share their first impressions, focusing on biodiversity of the island for the purposes of promoting the healthy island environment, and landscape diversity within the scope of recreational and adventure tourism. Publications promote karst terrain in the form of rockeries, ruggedness is presented by breathtaking vistas and cliffs, along with gravel beaches on its western and southern parts. ***"Tranquillity and intact nature"*** are the words most frequently associated with the island's ambiance[4], and it is considered that tranquillity can even be reached in the midst of the touristic season[5]. Focus on natural and intact aspects is specific because it is contrary to the process of the total anthropogenization of island. However, appearance of complete naturalness of the island is not inaccurate, given the fact that vegetation succession has been occurring without disturbance throughout the 20th century. It is often compared to Lošinj because of former administrative and physiognomic connections and touristic rivalry, as well: *"Lošinj is green, forested and surrounded by numerous coves with beautiful beaches frequently visited by dolphins. Cres, on the other hand, is tall and harsh, but both are beautiful."*

The island of Cres is still insufficiently promoted in tourism sector, which is evident in tourism agencies, whose numerous arrangements of trips to the coast rarely include Cres. Thus, **the island remains rather unfamiliar in the eyes of the public and is represented as an area yet to be explored**.

4 Literature source 37
5 Literature source 38

Image 3. Segment of the island of Cres during Habsburg Monarchy (3rd Military Survey 1869 to 1887)
Source: http://mapire.eu/

3. ETHNOGRAPHIC STUDY OF SPATIAL IDENTITIES

An attempt to articulate a model of identification with space, its material and non material values, its historic, economic and symbolic dimensions through experience and awareness of the local community, is based on personal confessions, life stories, shared experiences, attitudes and visions of the local inhabitants[6]. Along with recording factographic data, special attention was given to fluid and layered imponderabilia of everyday life - unwritten values and identifications, emotional, personal or collective levels of conscience connected to the landscape. A focus on synchronic aspect of the creation of island's spatial identity gives us insight into parallelism of modernity and traditionalism of everyday life. **In the context of the island landscape, anthropological places are recognized as spaces that generate identification of the individual and the collective and they are inscribed by history, relations and memory.**

3.1. Traditional formation and identity boundaries

The quality of **islandness** of the space, its physical enclosure and isolation, has for centuries articulated seemingly paradoxical simultaneous unity and division of the island of Cres. Its unity was enforced by the specific "economy of otherness" in relation to the neighbouring mainland. On the other hand, diversity of its geomorphologic, climatic and vegetative factors has encouraged stratification of internal social levels, including those that relate to the sense of belonging or not belonging. Previous ethnographic research indicates long presence of the Mediterranean way of life, which is predominantly represented by agricultural activities in open space, as well as frequently emphasized lifelong connection to the land:

"We were barely 13 years old when we started cultivating land with mattock. My grandpa gave it to me: "Look at this mattock, little Frane, it's so nice for you..." (F. K.)

The lack of land and abundance of stone resulted in morphological, visual and cultural recognisability of dry walls (*gromače*) used for parcellation, enclosing land or puddles, building barns, chapels, shepherd's dwellings and huts and settlements in general.

Besides the predominant dry stone walls, the spatial continuity of the island is characterised by **sheep breeding** that had significant influence on island's identity, its recognisability and economy. Functional interdependence of these two elements has definitely contributed to their unison distribution.

Former political, social and spatial context enabled relatively integrated and sustainable management of sheep breeding and resources in general. Therefore, approach to sheep breeding implied not only meat production, but dairy products and wool, as well, wherein the last two are completely lacking today.

The crucial aspect, that has affected the division within the island, is definitely its extreme longitudinal spatial context that in certain locations generates a strong sense of enclosure, isolation, oblivion or specificity. In a stretch from Tramuntana - the northernmost and the most forested part of the island, to Punta Križa - its southernmost area, also considered as "the least representative of Cres" - the space is disintegrated into numerous little localities, micro ambiances and adjoining habitats.

Several island locations, either by their infrastructure or position, or by the local sense of belonging or not belonging or by their deterioration, represent the **"appendix"** of the island. Those places are the peninsular area of Punta Križa and eastern and western Tramuntana. The stretch from Belej across Ustrine to Osor and Punta Križa geographically belongs to Cres, but administratively to Mali Lošinj, which consequently evokes a sense of alienation from both, rather than a sense of belonging to one of them.

On the other hand, some areas stand out and are felt like "the most representative of Cres", like east Tramuntana and Beli, the town of Cres, Lubenice or Orlec. However, it is difficult, almost impossible to discern whether this classification is a repeated pattern of promoting representational places, as defined by the touristic self-presentational rhetoric, or if they really are places of spontaneous identification.

Numerous island micro locations and ways of life, like olive and vine cultivation, cutting and exporting wood, fishing or sheep breeding, have for centuries defined local identity points and boundaries, transposed in time, predominantly present to date.

3.2. "Modernity of tradition"

Traditional way of life in a contemporary context of the island primarily refers to agriculture (sheep breeding, fruit and vegetables cultivation). The millennial and successive transfer of these primary activities into additional income represents **collective and family tradition, a habit, and a symbolic and emotional category**.

The human and sheep impact upon the landscape formation is characterized by a thin causal boundary: humans adapt and allocate vast parcelled lots to sheep, that are, in turn, a crucial factor in creating visually dominant and recognizable barren pastures. Anthropogenic forms within landscape, covering most of the island, are predominantly defined by dry wall construction, natural and rudimentary manners of land use, as a material and a resource with its specific character, possibilities and limits. Although many of them still satisfy their primary function, within the context of current value systems we perceive and categorize them as architectural heritage characterized by identity codes of specific cultural territories.

The quality of execution of traditional architecture, high level of functionality and absence of significant new initiatives and manners of space use, has completely annulled the temporal relation of then and now that contributes to **the high level of specific island self-conservation.**

Taking a present way of life and radical abandonment of traditional trades into consideration, the appearance of Cres landscape remained relatively preserved and autochthone in its modernity.

Contemporary sheep breeding is significantly different and reduced in comparison to traditional. Besides absence of milk and wool production, selling lamb is often considered unprofitable, demanding and difficult, especially among younger generations. This does not only open a question of local and state policy and development strategies, problems and incentives or economic profitability, but it also questions significant generational change of mentality, expectations and standards.

Middle and older generation of islanders have been breeding sheep for symbolic reasons only. **Even though many of them keep just a few or several dozen sheep, their value is almost memorial and transcends categories of economic profitability.**

It is one emotional harmony between a man and that sheep. Meaning, generations are used to having a sheep around them when they are born. Meaning, he doesn't start thinking about sheep breeding when he is thirty. He is born with the sheep (...) More precisely, children when they are already one, one and a half years old, they already run after little lambs, it is already something that he is used to. And for the whole life cycle, a man is connected to it. (...) "Shoopee, here! " - it is one call that we use for calling sheep. Like: "come to me". (...) And it comes to its

6 The research was conducted in 2015, predominantly using the method of semi-structured interviews. More than 40 participants, belonging to different age groups, professions and residences were questioned.

owner because it knows it will get some bread. That is the specific connection between the man and the sheep. (L. H.)

Generational shifts in the future may lead to complete abandonment of this trade on the island, and consequently have a wider causative impact, which will be discussed in the following chapters.

3.3. Spatial dynamic and static

The network of island roads and paths is a linear matrix that reflects dynamics of spatial relations, their use, perception, evaluation and categorization, and as such can be considered on several levels. The map of island roads and paths (image 4) depicts a three-layered scheme of partially arbitrary inscribed lines (especially fragmented network of trails and paths), wherein emphasis is not on geographic validation but on stylisation and illustration of spatial dynamics regarding use and evaluation.

Three basic groups of island's linear matrix of roads and paths:

1. The main north - south longitude. Dominant fast road that focuses interest, enhances infrastructure and accelerates the passage through the island. It is used by all local inhabitants, tourists, travellers, workers... **2. Smaller roads.** Older, narrower, mainly asphalt roads that lead to smaller settlements, estates and bays. Local inhabitants, tourists and other visitors occasionally use them. **3. Paths/trails.** Predominantly old and abandoned field paths leading to pastures, olive groves, puddles, bays, shepherds' dwellings, estates. They are the most significant in terms of their complete length, age and distribution. They are rarely used due to strong deruralization, deagrarization and centralization of activities and life in bigger settlements. They are mainly used by local inhabitants (those who are still oriented towards agricultural activities, younger recreationalists and hunters) and tourists (searching for active, adventure or sport tourism).

It should be pointed out that characters, possibilities and restrictions of these roads and paths often don't fit the framework of common valorisation and should be considered in wider spatial and social context. The main longitude can incorporate the function of stronger and faster connectivity, but also of additional centralization and marginalization of some island areas, as well as strengthen the perception of Cres as a **transit zone** for the mainland or Veli and Mali Lošinj. In that aspect, together with ferry ports in Merag and Porozina, it belongs to one of the

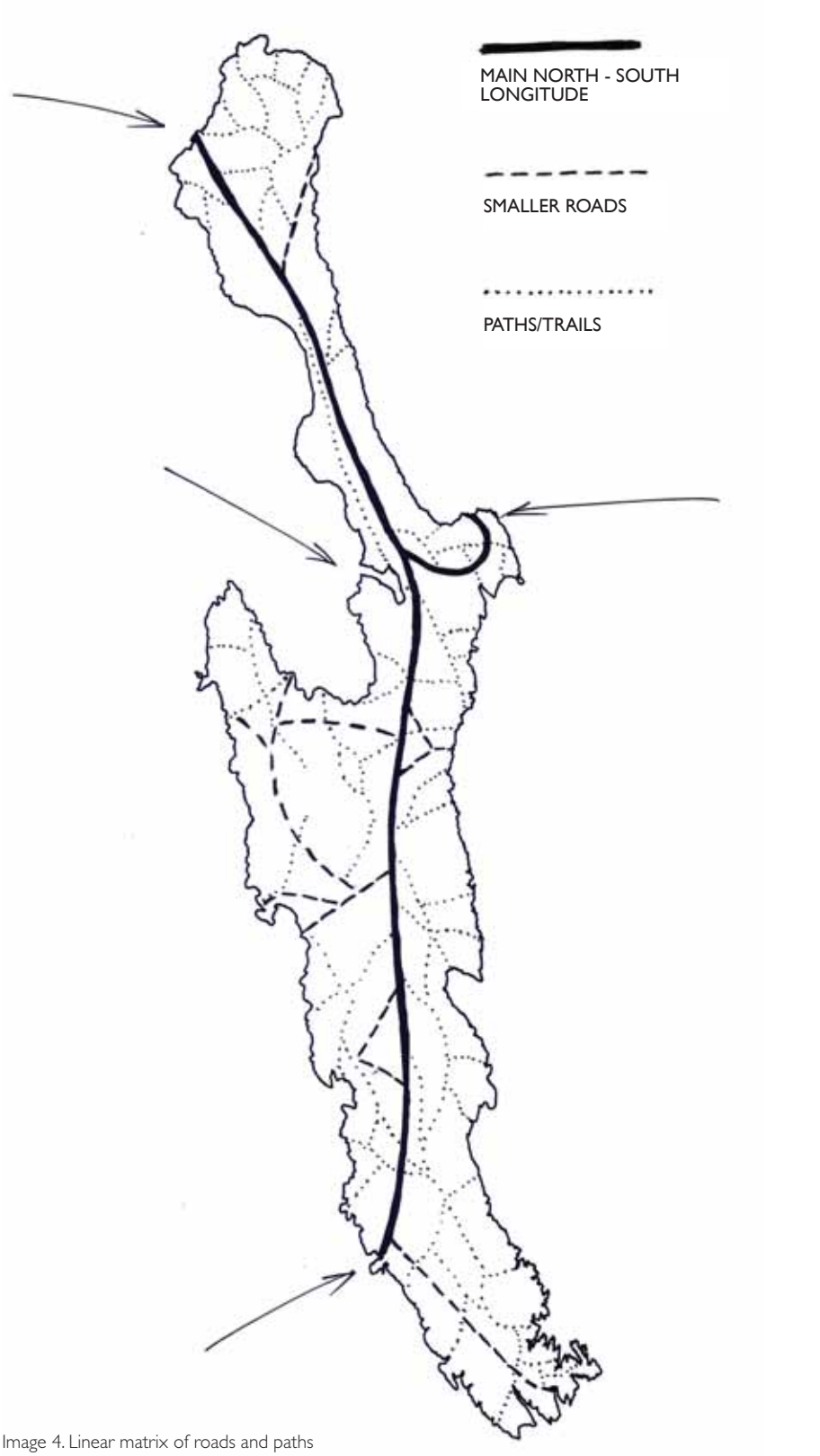


Image 4. Linear matrix of roads and paths

strongest island non-places[7]. On the other hand, presently almost invisible and forgotten paths and trails have a potential, if not infrastructural, than of better symbolic connections, in terms of identity, memorial, historical and economic reconstruction of the island as a place of living, production and use, further discussed in the chapter on possibilities of integrated management.

3.4. Places of inscribed meaning

Without the necessity or possibility of their ultimate defining and mapping, we have tried to roughly "feel" the present-day places as areas for relaxation and walking, that carry the potential of attachment, inscribed meanings, personal experiences or memories. Konec, an old path to Merag and surroundings of St. Bartholomew, the path to St. Salvador and St. Blaž, the path to the guardhouse and the green lighthouse, the path to Helm peak and Sis peak, paths through the forests of Tramuntana and forests of Punta Križa, the climbing trail next to Martinšćica and Porozina... are only some of the locations and paths that have been emphasized as unique, significant, beautiful or pleasant. Those areas are usually inaccessible or unknown and the significance thereof is not determined by official policies and frequency of use (representational places) but by spontaneous intimate preferences and dynamics of visiting and valorisation. It can be said that **identity and symbolic value of the landscape primarily depends upon numerous locations characterized by invisible inscriptions of personal significance, therefore, it can and should be considered and valorised through simultaneity and interdependency of its material and non material aspects.**

On the other hand, there are numerous locations whose morphology is characterized by histories and memories of certain communities and whose value lies in collective inscriptions of history and landscape. In that context, ethnologist Grga Frangeš emphasizes surroundings of the town of Cres, describing it the following way:

I generally find those landscapes interesting, primarily as immediate surroundings of a town, with rather obvious aesthetic qualities; the network of paths along stone dry walls, olive groves, terraces. There are numerous chapels, five, six, each tied by a fraternal community, a vow, and therefore it is a part of historic complex of Cres. You cannot only engage in preservation of a town, you must take into consideration the fact that the town history happened in those olive groves. And there are so many trails of that kind. (...) I think that cultural landscape must be subject to a wide criteria, it is one area that represents, shows interaction of people and landscape, that reveals some unique values and the way of life of its inhabitants; and it also an aesthetic criteria, functional, on the third side, that it needs protection.

3.5. Utilitarian landscape as a place of identification

Personal or collective inscriptions of meaning into the space open up a new question; to what extent and manner is the every day utilitarian landscape a place of identification within the local community. It is important to mention, if not new evaluation systems and manners of perception, at least new tendencies of relating towards the space. They are primarily defined by the sequence of generations within which it is possible to follow radicalization of the then and now distinction in shorter time intervals.

Conditionally speaking, older generations have been building a strong relation towards landscape as a space of everyday life, work, obligations, residence, possession or survival. Their daily motion frequently implied greater distances (in terms of absence of centralized life and work) and detailed knowledge and perception of **space as a territory - a place of "strategic" significance, possession, emotional and geographical belonging**. Whether it was just going to olive groves or pastures, taking ox to puddles, wood cutting, building chapels and barns, renovating paths, stone dry walls, etc., this space predominantly implied distances reachable by "human foot" and physical abilities, that mainly defined spatial relations in terms of everyday lives for the majority of Cres inhabitants. Frequent cases of the oldest generation on island, whose whole lives were physically tied exclusively to their narrow territory of life and work, confirm that **movement along wider island areas represented exception, and not the rule**.

For new generations, larger spatial relations are by far easier and faster to reach, and their mobility is growing more intense by the day, leaving the domain of smaller local territories, which is partly analysed in the chapter with three-layered roads and paths. Such linear matrix clearly reflects relations between former and present space evaluation by which - **a narrow space - a former territory of high significance gives place to wider space, beyond island boundaries.** Bearing in mind the impossibility of complete and clear distinction between old and new generation, it is possible to conclude that **space use by older generation implied specific smaller areas of qualitative territorial significance, while space use by younger generation implies dominantly extensive and quantitative impact.**

3.6. Causative socio-eco system

Islandness of Cres definitely enhances the significance and extent of causative dynamics, on biological, social and economic level. Local in-

7 Non-places are transit areas with no history, relations or identity. They are opposed to anthropological places.

Image 5. Olive groves in the town of Cres surroundings

habitants are well aware of that fact, as well as the whole "vicious" circle, enclosed by singular changes in the nature. *There is no biodiversity, but wild boar. (L. H.)* – is the concise and clear statement on the alarming state of island relations caused by uncontrolled movement and multiplication of allochtone wild species– **wild boar and fallow deer**. The problems they cause have a great impact so every discussion about island includes that fact. Ecologist Gordana Pavoković analyses biological relations the following way:

Exposed to vegetation succession, Cres pastures cease to be pastures. Juniperus (šmrika) has completely "overflown" them, having several consequences: the appearance of the landscape changes, biodiversity is reduced, due to the lack of pastoral surfaces sheep breeding vanishes, and decrease in the number of sheep has a direct negative impact upon the population of Eurasian griffon vulture. Furthermore, allochtone wild boars find shelter within this habitat and have additional negative influence on the ecosystem. (...) Animal husbandry was the reason for maintaining puddles. (...) Present sudden decrease in number of sheep due to overgrown pastures and the presence of allochtone wild species represents a loss of a very important component of the ecosystem. That, in turn, negatively affects other components, starting with dung beetles, through plant species, birds, especially species that feed on carrion.

The role of island hunters as necessary "stabilizers" of uncontrolled expansion of wild species has only formally been defined, while local inhabitants perceive their actions as severely problematic, immoral and politically instructed. Nevertheless, it should be considered that there are different motives for hunting and different relations among hunters and hunting associations, as well as great oscillations between practices of profitable and elite hunting tourism and agricultural land and sheep owners that are trying to protect their estates and herds. There is also a record of parallel types of hunting in terms of illegal activity, exploitation, hobby or protection, wherein **hunting drastically varies between private and public interest**.

Ecological component reflects on social relations and economy in a complex and thorough manner. Abandonment of traditional trades like sheep breeding and fruit growing has definitely increased due to problems of lamb slaughtering, demolition of stone dry walls, destruction of crops and puddles... - are only some of numerous demotivating aspects caused by the **allochtone wild species as generators of island imbalance.**

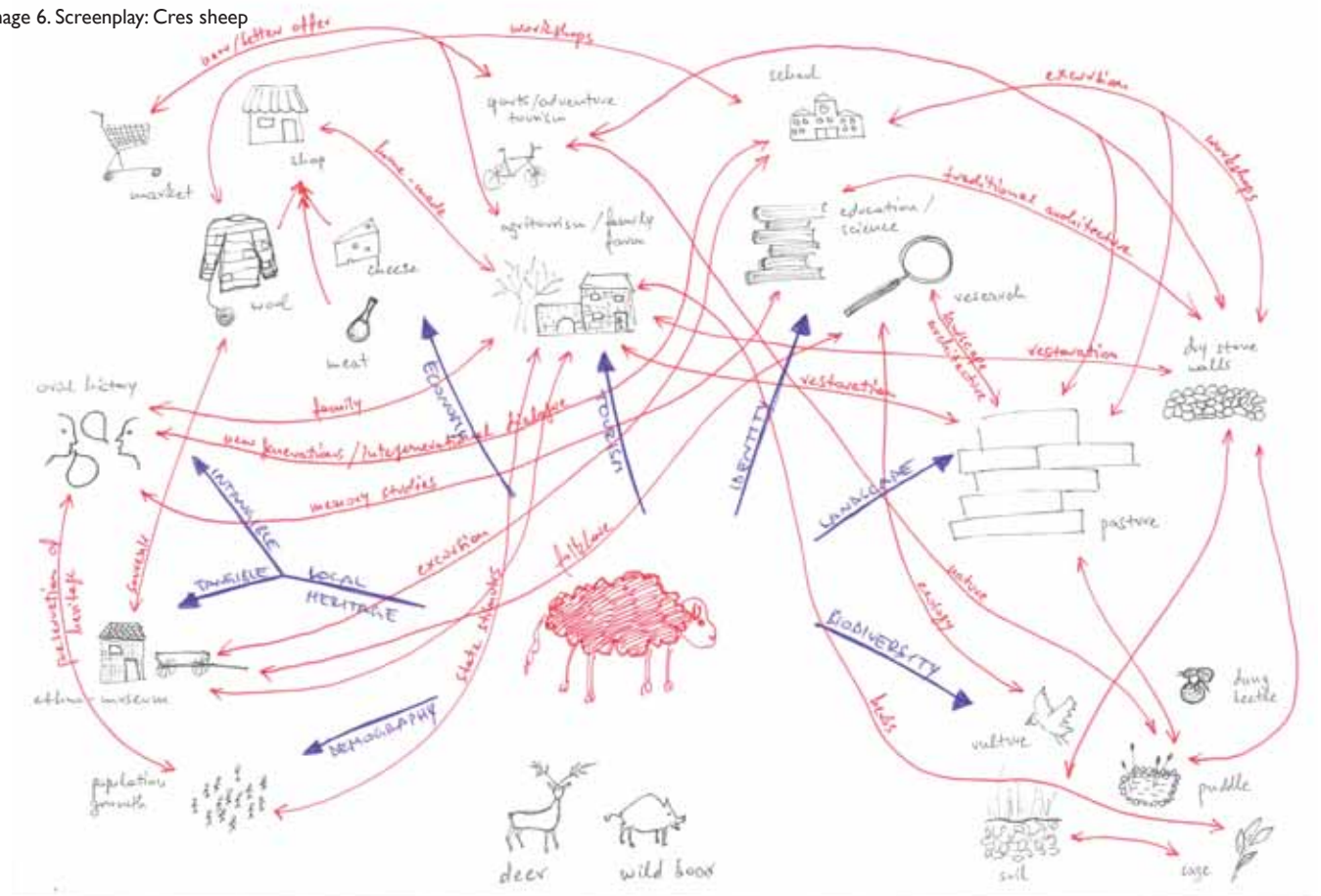
And somebody says - why don't you renew stone dry walls (gromače)? Why would I do that when they'll tear them down in a month?! (LJ. G.)

If a sheep was analysed through the prism of the Cres trademark, its leitmotif, its cultural and economic engine, the key potential or a brand - **it is possible to distinguish partially existing and partially imaginary scenario of a complex network of relations deriving from each other and producing meanings in a domino effect**. Some of the causative social and biological domains are: island demography, material and non-material heritage, economy, tourism, identity, landscape and biodiversity (image 6).

3.7. Integrated cultivation of people and space

One of the positive and encouraging factors in the conscience of local inhabitants is definitely a **relatively developed sense of necessity and possibilities of integrated management**. In discussions relating to the future of the island, encouraging young generations to return, developing and modifying touristic offer, protecting material and nonmaterial heritage - there were suggestions implying integration of agriculture, animal husbandry, tourism, family farms, hybrid

Image 6. Screenplay: Cres sheep



contemporary offers based on the rural character of the island, its specific resources and tradition. The vision of island tourism, according to the autochthone "Cres model", is different than very successful and developed elite and health tourism of the neighbouring Lošinj and is more similar to "the Istrian model". It is characterized by different forms of "contemporariness of tradition" and "economy of yearning", described by Ines Prica: "a wish for temporary belonging interchanges with longing or compulsion for leaving, while the cyclical movement determined by the rhythm of global tourism in its background, necessarily leaves traces of occasional abandonment and solitude".

The imaginary "Cres model" is economically close to sustainable development and integrated management of quality, but also to contemporary marketing needs and trends. Cres inhabitants that base their present island economy on **tourism and hospitality zones**, are aware of the fact that the island needs new forms, not just of touristic offer ("soft" adventure and sport, eco-adventure, gastro-ethno-tourism...), but also of management in general:

In my opinion, to manage one household, and make a story out of it, I think that such a village would live. Agricultural family farm is a perfect model for it. And now you take one family to manage such agricultural farm.... that way leaving of young families for the mainland is avoided. (...) Agriculture and tourism combined - I think it is a winning combination. (S. F.)

My goal is that in that olive grove, to sell olive oil, that visitors from camp go for a walk, that a path to olive groves is constructed; and that the guest that passes by comes inside the olive grove and buys oil. Agro-tourism. (D. J.)

Marketing experts record tendencies where "information society" gives place to "society of experience and imagination", and new buyer/tourist seeks activities that incorporate "high emotional content". Cres in a function of potential island-product definitely satisfies new marketing needs, and creation of these contents is achieved on different levels; from unconscious, instinctive or spontaneous to planned and clearly articulated.

I will never forget it, in '95. There was a storm, something, especially before they renovated that electricity, we were constantly cut off in Belej. You have no more, have no telephone, you don't have anything any more. And I had one visit, they're from Italy. Now, what am I going to do... and nothing, I gave them candles, to their room in the bathroom, candles all over the house, out on the terrace. And now I in the morning, not saying anything... what will happen now, what will they say - where did they come, somewhere in the sticks, a village, definitely something... And they told me: "Whoa, if only you knew how beautiful it was for us last night, we went back to those times when we were kids" - she says. "I enjoyed myself, looking only at the sky and smoking outside, here, on the terrace, by the light of the candle. It was so nice..." And I told them: "We can always make it for you, but we can't shut down public lighting, we turn off the lights in the house, and that's it!" (M. M.)

Agro-touristic households in function of hospitality, housing and production zones provide required personalization of services and the potential thereof lies in the hybrid manner of earning income and integration of sectors: agriculture and animal husbandry, catering and tourism (gastronomy, accommodation), education (ethno-collections, workshops...).

In a wider context, these types of earning income can have a positive impact on tendencies of deruralization, deagrarization, abandonment of villages and lands, abandonment of traditional ways of living and earning income, forestation and pastures overgrowth, changing landscapes and losing visual identity of the island, aging of the population and departure of the young. Cres inhabitants often create them in a form of official model of small family farms (OPG).

If we go back to described distinction of formerly omnipresent qualitative territorial feature of certain landscapes and contemporary tendency of extensive and quantitative spatial dynamics and managing manners, **agro-touristic households and similar forms can be observed through their potential as a middle point between extremes of valorisation and landscape management.**

However, the other side of local awareness of the need for different development and management of the island implies **the problem of strong passivity and inertness of the islanders**. On the one hand, unsatisfied by the current condition, on the other hand "satisfied" that their life standard has never been higher, Cres inhabitants describe their mentality, younger generations and their static position in the following way:

The problem is that people are inert. That is a huge problem. Now he's working in tourism, works really hard for four months, than he is free, goes fishing and so... (LJ. G.)

They don't know, unfortunately, how to take a good look around themselves. They wait for the passage of time. I can't see one serious initiative here among these young people. Because there are simply no funds to invest in anything. And then he stays on what his parents left him. Meaning, he lives in that parents' house, deals with those sheep that his parents left him, doesn't invest anything and if he has some job on the side that, sort of, goes... But that is all, from today till tomorrow. (L. H.)

Besides "internal", there are also numerous "external" problems in managing island, using resources, progress and protection of identity and tradition. They come "from above" and are connected to inappropriate, irregular or non-implementable laws and administration. The most representative examples include unclear legal-ownership relations and cadastral fragmentation. The passive synergy of "internal" and "external" problems greatly dictates current life and appearance of the island, usually through the framework of recognizable island status quo and all of its positive and negative aspirations.

Image 7. Catering, Podol

4. LANDSCAPE ATLAS OF THE ISLAND OF CRES

1. LANDSCAPE UNIT OF TRAMUNTANA

1.1. East Tramuntana plateau

1.2. West Tramuntana faulted valley

1.3. The central ridge with plateau Planis

1.4. Coastal sides of the central ridge

2. LANDSCAPE UNIT OF THE TOWN OF CRES

2.1. The Cres valley

2.2. Hilly terrain of the Cres hinterland

2.3. Coastal side of the Valun bay

3. LANDSCAPE UNIT OF "ZAPADNA BANDA"

3.1. The high part of the Gerbin area

3.2. Forested west coasts

4. LANDSCAPE UNIT OF THE VRANA LAKE VALLEY

5. LANDSCAPE UNIT OF THE CENTRAL PASTORAL PLATEAU

5.1. Central rocky pastures

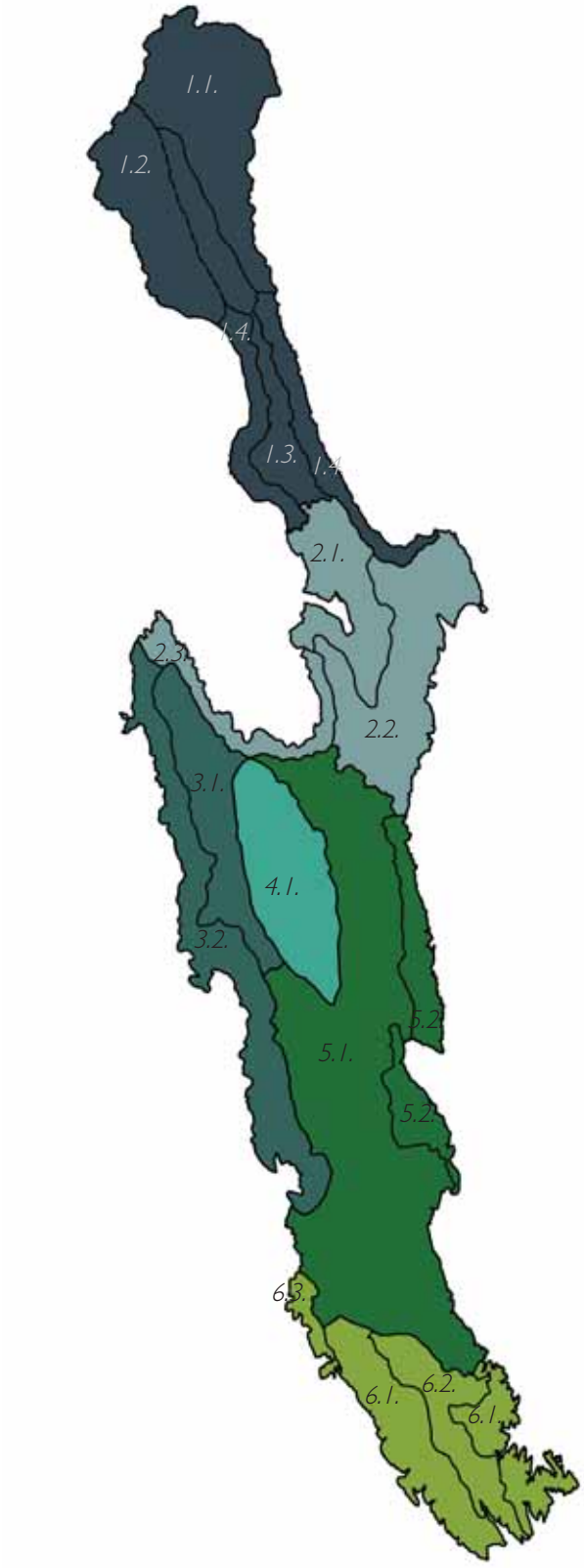
5.2. Barren pastures of the eastern coastal side

6. LANDSCAPE UNITS OF OSOR AND PUNTA KRIŽA

6.1. Forested and indented coastal sides of Punta Križa

6.2. Central valley of Punta Križa

6.3. Osor and the shallow bay



LANDSCAPE UNIT OF TRAMUNTANA:

Landscape areas:

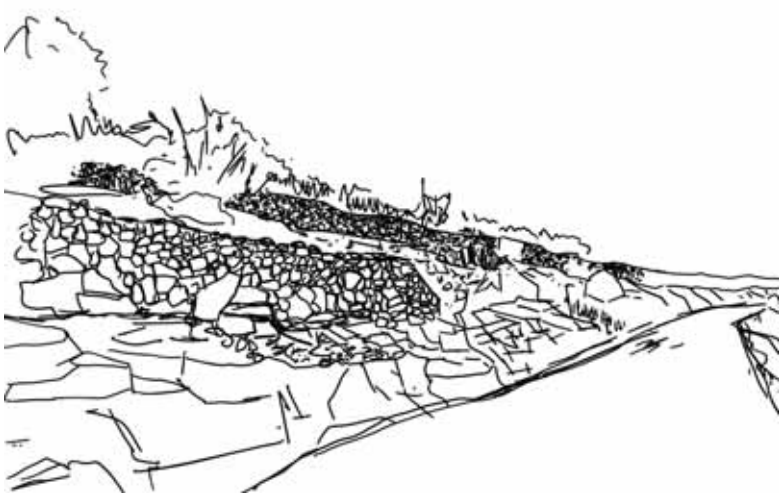
East Tramuntana plateau

West Tramuntana faulted valley

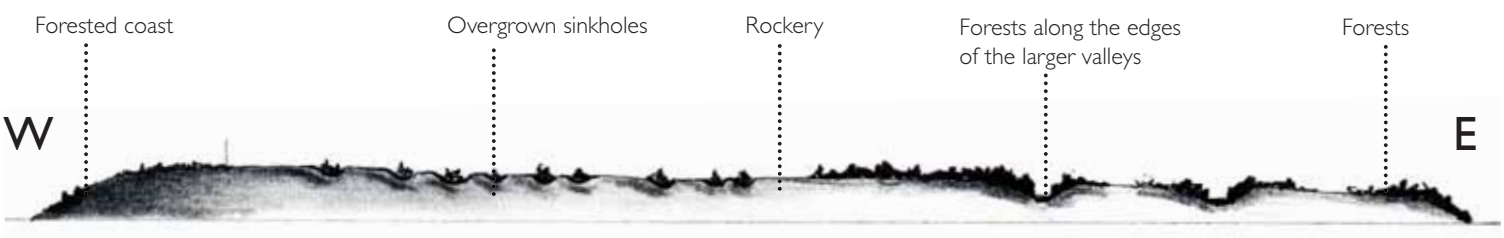
The central ridge with plateau Planis

Coastal sides of the central ridge

"It's rockery out here, so the rockery dictated where dry stone walls (gromače) went. (...) some had, I think it was inherited, I think from father to son and so. Some were richer, some poorer, it means some had more parcels and some less. Mainly, it was, sort of, one standard, one measure and it was called ovcapaši, they call it hectare nowadays, and then it was ovcapaši."(L. H.)



"It is those, we call them lihi. They are small arable lots, where man dug out stone, built dry stone wall fences to get few squares of land. And now when you see how many there are, how much stone he had dug out to get 5 squares of land, it's incomprehensible..." (L. H.)



Cross-section of the landscape unit of Tramuntana

IMPRESSIONS AND VISUAL EXPERIENCE

- Dark, secluded, forested and almost continental ambiance, uncharacteristic of island
- Small cultivated pastures and settlement complexes in contrast to tall dark forests
- Prevailing sense of naturalness and abandonment of traditional elements
- Distinguished rural complex Predošćica
- Dominant elongated ridge divided by stone dry wall to its bare and forested side
- Scattered vistas of the surrounding sea and mainland

SENSITIVE MAP

4.1.1 East Tramuntana plateau

The far northeast of the island, locally referred to as Tramuntana, is characterised by high dynamic karst relief with sinkholes, dominated by tall deciduous forests, architectural heritage represented by shepherds' dwellings and a network of old forest paths.

Relief

The area is predominantly characterized by dynamic sloping plateau stretching between 200 and 400 m above sea level (masl). The sea surrounds its northern and eastern side, while the central island ridge that lowers down into the plateau encloses its western and southern parts. Its specificity is represented by numerous sinkholes, some reaching 100 m in diameter, and they create small separate ecosystems under the influence of the Sub-Mediterranean climate. Two types of coastal zones can be differentiated within the area. The northernmost part (between capes Jablanac and Grota) is characterized by poorly developed shores with high coastal cliffs, created mostly by tectonic but also by abrasive force of the waves, generated by the so-called "Bakar bora". The southern coast is more indented, with beaches created by the accumulation formed from torrential flows and submerged valleys from adjacent slopes.

Vegetation cover and land use

Large forest surfaces dominate this area. Exposed to continental climate, Tramuntana forests comprise complexes of high deciduous trees like downy oak, sweet chestnut, turkey oak, elm, oriental and hop hornbeam, extending all the way to the coast. Due to increased forest exploitation in the past, there are numerous paths made of stone blocks that were used to facilitate wood transport to the coast. Although a natural element, these forests originated from former forest pastures. Traditionally, land use was based on agro-silvo-pastoral system, according to which forest management implied topping trees taller than 2-3 m *(pedalenje*), and the undergrowth was subject to cattle grazing. Such land use was based on sinkholes as its primary agrarian element (nowadays they are rarely active, but still very visible), which is evident in dry wall fences and cultivated gardens and small arable plots. This agro-silvo-pastoral land use was connected to numerous shepherds' dwellings owned by landowners, but they are mainly abandoned nowadays.

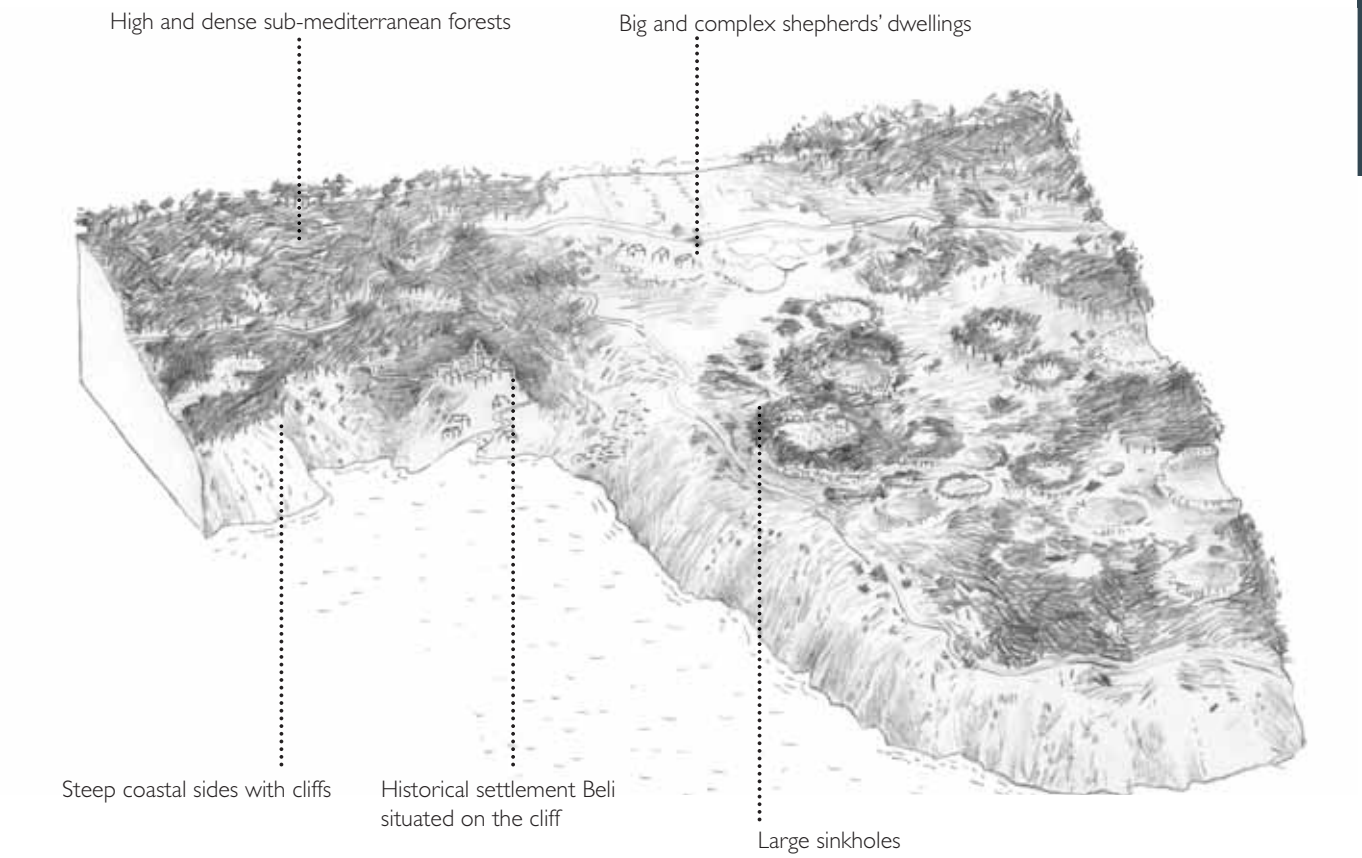
Architectural heritage, settlements and paths

Prehistoric settlement of Beli, shepherds' dwellings and other rural complexes bear witness to traditional population oriented towards developed animal husbandry. Although its strategic location on a cliff 130 m above sea level reveals views that are convenient for observing maritime routes, Beli is nevertheless economically oriented towards its hinterland. It is characterized by compact medieval core with parish church and the surrounding square. The bay below Beli includes a beach, a camping site, several residential and hospitality facilities and a former harbour used for loading bauxite and wood supplies from island's inland. There are also two smaller settlements with only a few permanent residents: Sveti Petar and Ivanje. Like Beli, Sveti Petar is perched on the upper rim of the coastal side. The entrance to the village is specific for its protected natural monument, a 400 years old downy oak tree that was recently halved by a thunderbolt. Village Ivanje is located within the forest area.

Historical maps give insight into a dense intertwined network of paths that are mainly impassable and are subject to new purposes nowadays. The paths that traditionally connected villages of Tramuntana are now marked with eight educational eco trails. Artistic sculptures engraved with verses are placed on perceptively interesting spots along the trails and are harmonious with the forest, valley or shepherds' dwellings in the background. Dry stone walls are an important feature of the landscape structure, and their organic pattern derives from topographic characteristics of the area.

Scenery

Thick forests and specific vegetation dominate this area, creating impressions of dark and enclosed space, similar to continental landscape. The overall atmosphere is enhanced by occasional snow during winter periods. Such atypical ambiance has attracted new alternative contents, including open art museums and spiritual activities. Scattered pasture clearings and settlement complexes surrounding shepherd's dwellings, puddles and sinkholes give balance to the prevailing impression of vastness and seclusion. The only linear corridor consists of roads and transmission lines, which reveal narrow forest openings. Higher points without dense vegetation offer panoramic vistas. Edges of coastal sides reveal views of Rijeka and the surrounding sea, while the western side is characterized by views towards and from the village of Beli.


High and dense sub-mediterranean forests
Big and complex shepherds' dwellings
Steep coastal sides with cliffs
Historical settlement Beli situated on the cliff
Large sinkholes

4.1.2. West Tramuntana faulted valley

This landscape area is somewhat similar to east Tramuntana; both are equally forested (the same forest complex stretches through the eastern part), both have numerous sinkholes and a high plateau. However, due to its more indented plateau and a clear physical separation by the main ridge and its orientation towards west coast, this landscape area stands out as a separate unit.

Relief

The area is surrounded by the sea on its northern and western side, while the central island ridge forms its eastern border. A sequence of parallel valleys, ridge slopes and a dense network of sinkholes characterize its undulating relief. The main tectonic structure has a NW-SE direction and it is aligned with longitudinal faults that form the largest Tramuntana valley (1 km long) and the parallel ridge that extends from Halm peak (431 masl) to Veli Črni peak (582 masl). The area has western exposure, and its coastal side is high (up to 250 masl), steep and scattered with torrential flows ending in gravel beaches. Pregrajena bay (below Dragozetić) and Stara Porozina bay are especially distinctive within the area.

Vegetation cover and land use

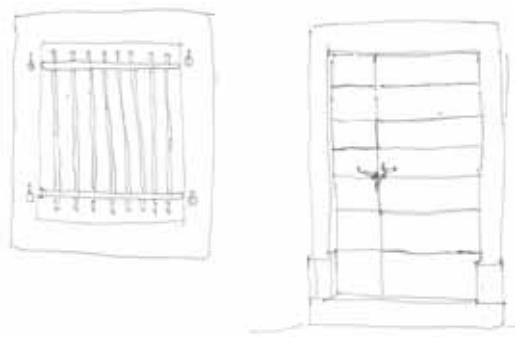
The higher eastern part belongs to thick tall Sub-Mediterranean deciduous complex of Tramuntana, which consists of downy oak, hornbeam oriental and hornbeam hop trees. The western part is mainly influenced by natural succession of juniper fouling (*Juniperus oxycedrus L.*). Although subject to natural succession of vegetation, these surfaces are extremely extensive (forest) pastures, represented by pastures enclosed by dry walls, sporadic small clearings within the forests, grass undergrowth below trees and beaten paths used for the cattle. The area outside the dominant forest cover with scattered little clearings comprises few elongated valleys and their traditional agricultural purpose is represented by the dry stone wall parcellation, and even more by the developed small rural complexes with settlements Filozići and Dragozetići.

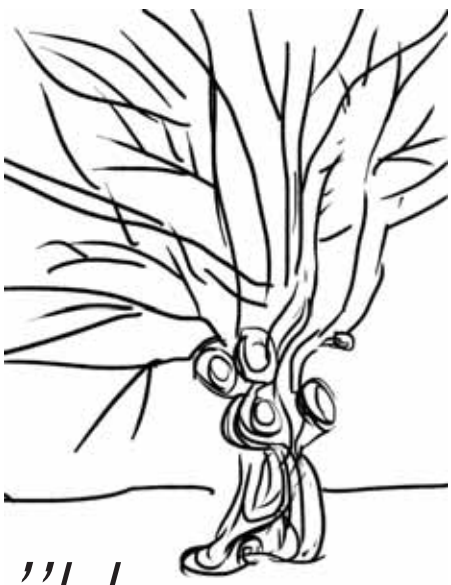
Settlements and paths

There are three settlements within this area. Settlements Dragozetići and Filozići are located above cultivated valleys. Although authentic matrix and architecture represented by compact character with the church in the centre are preserved, new construction is compatible with the ambiance. Together with adjacent valleys, they enclose rural complexes with predominantly neglected and inapproachable agricultural areas. Dragozetići village is located at the top of the coastal side, with western orientation and terraced structure, while Filozići village is unique because of its location deep within the forest. Porozina, a village with origins relating to an old lighthouse, is situated near the shore. Village architecture lost its traditional and historical features and is mainly defined by holiday houses. The state road passes through the central part of the landscape area, connecting these villages and the surrounding area with the rest of the island.

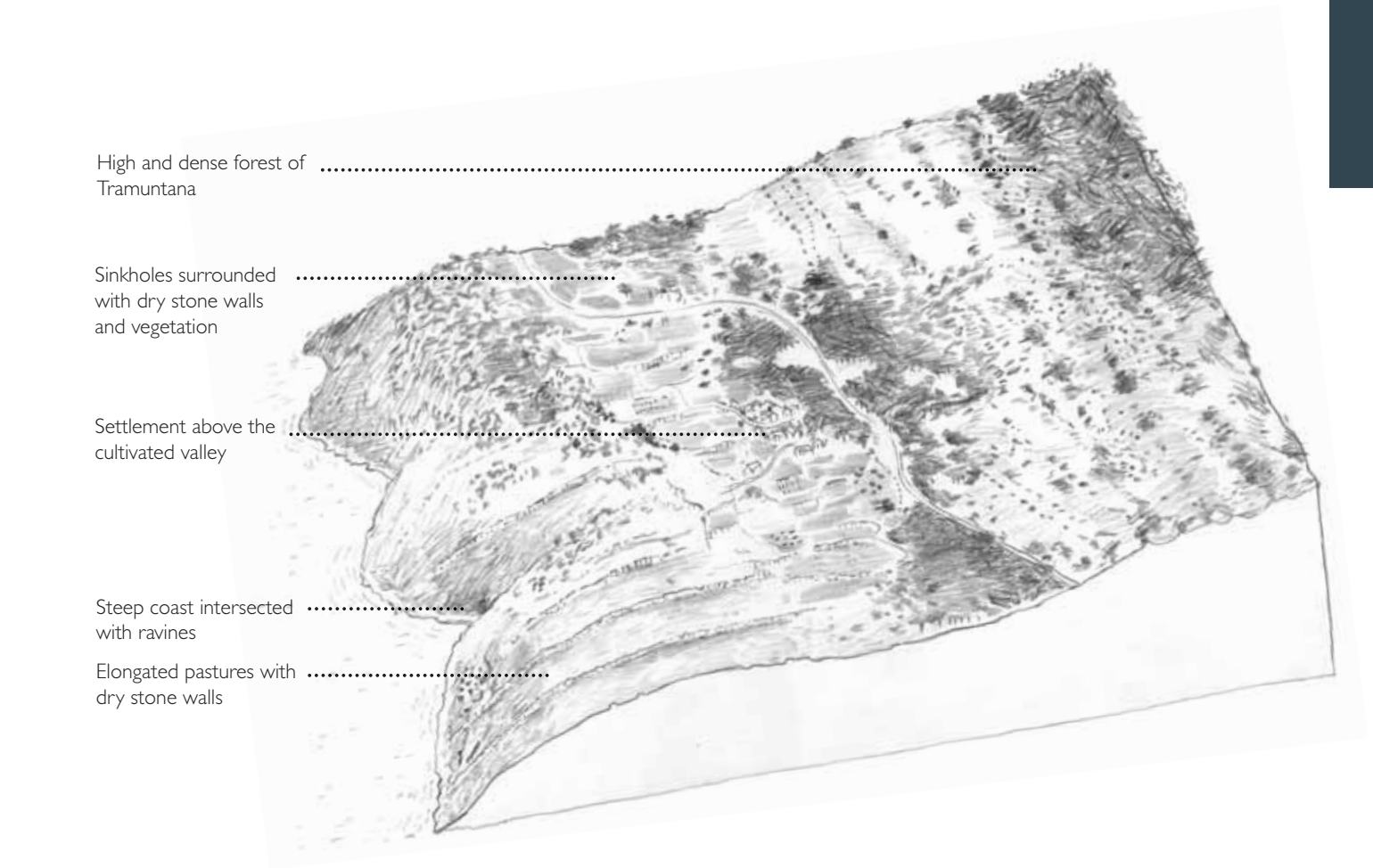
Scenery

Predominant high vegetation defines the image of this area; it is forested and natural, but at the same time almost impassable and inaccessible. Contrasting complexes of small pasture clearings define it. Villages, as its fundamental gravity elements opposed to spacious wilderness, create tamed cultivated "oases". Despite its spaciousness, forest cover encloses views, allowing only a glimpse of the winding road passing through its central part. A walk along old paths that traditionally connected settlements with pastures evokes a sense of history. On the other side, the westward orientation opens vistas of coastline, sea and Istria, and the northernmost peak offers views of north Kvarner and Rijeka, which is a unique characteristic of Tramuntana area.





"Here, they say 'pedal' for a tree, but a pedal is the upper tree that is being cut. Now when you will go by the main road back, you will see a bump and it grows. They were always cutting it, the upper half. And that is the way the forest was preserved. Otherwise, if they were cutting down all the tree, there would be no forest today. That was the feeling (...) yes, that was life. (R.R.)


High and dense forest of Tramuntana
Sinkholes surrounded with dry stone walls and vegetation
Settlement above the cultivated valley
Steep coast intersected with ravines
Elongated pastures with dry stone walls

4.1.3. The central ridge with plateau Planis

The central ridge area together with adjacent plateau Planis represents the highest and the narrowest part of the island.

Relief

The limestone ridge, following Dinaric direction, that together with plateau Planis stretches all the way to Cres bay defines this area. It is divided into subunits by three passes. The northernmost block Orline-Gorice-Sis (higher than 600 masl, the highest part of the island) extends into lower and narrower Barbin-Velo Gračišće ridge, with longitudinal fertile valley Dol located near the top of the ridge. The narrowest block is extended into plateau Planis with several peaks above 500 masl and numerous sinkholes.

Vegetation cover and land use

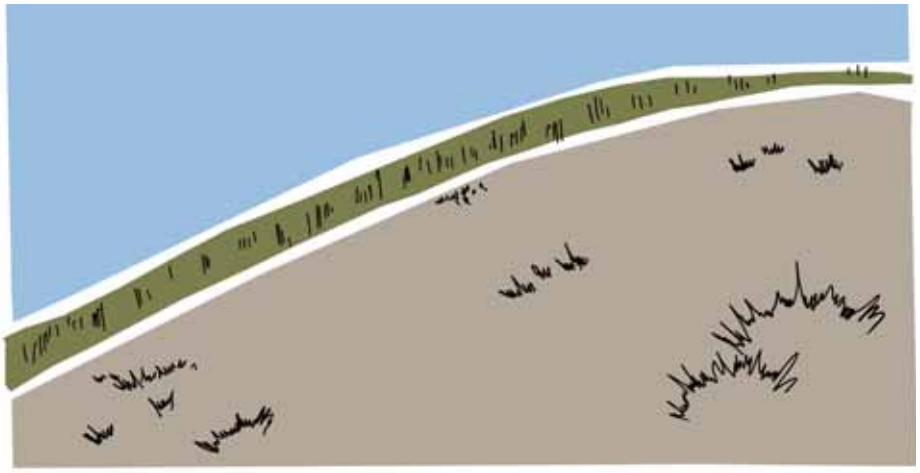
This area is defined by moderately warm rainy climate with continental characteristics, evident in its vegetation; lower northern parts of the ridge and the valley are predominantly covered with deciduous forest and garigue units of downy oak and oriental hornbeam while the tops, the pass and the plateau are mostly barren due to exposure to frequent wind gusts. As an exception, there are larger units of artificially planted black pine above the village Niska and in the southeastern part of the plateau (afforestation under French and Austrian administration). Vegetation cover and land use are defined by this subdivision of relief units. Plateau Planis is a singular unit that was traditionally used as a communal pasture, which is represented by the massive dry wall enclosing it. Extremely large and deep sinkholes were traditionally cultivated. A small elongated cultivated valley defines the central and the narrowest unit. Together with the settlement Predoščica and the surrounding rocky pastures, characterised by elongated square parcellation, it encloses characteristic rural complex. The third unit is the ridge itself. Its base is defined by regular dry wall structures of former managed pastures, and a specific dry wall along the ridge indicates a possibility of communal pasture at its cusp. The area was also significant for bauxite and wood exploitation. Wood was mainly used for heating and construction purposes.

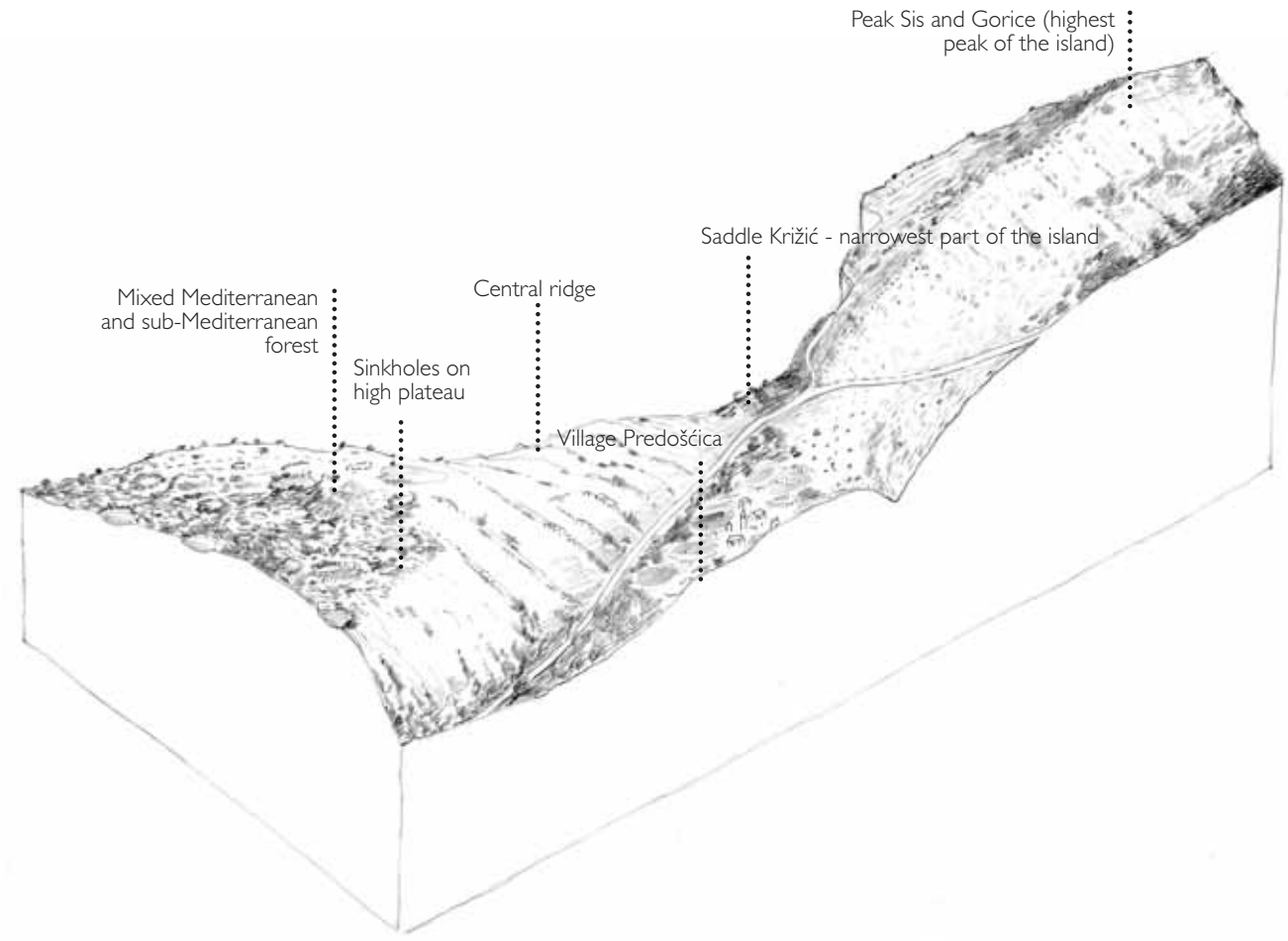
Settlements and architectural heritage

Cultural and historical heritage of the area is represented by its paths (especially the Napoleonic trail that connected Cres and Porozina), prehistoric hill fort at the peak Sis, shepherds' dwellings Bubnji and Krušovica and the village Predoščica with its very recognizable (distinguished and exposed) location. Predošćica comprises the village complex and cultivated elongated valley. Its semi-compact structure comprises ten traditional stone houses. The parcellation of the valley follows irregular organic pattern of gardens and pastures enclosed by stone dry walls that are mainly abandoned nowadays. Other anthropogenic structures, apart from Predošćica, include shepherds' dwellings on the west slope of the ridge (Bubnji) and at the bottom of Velo Gračišće (Krušovica). The state road passes through the central part and extends in eastern and western direction at the pass Križić.

Scenery

This area is not perceived as a unit, but a complex of different subunits, evoking different impressions. An elevated symmetric central, almost inapproachable ridge, divided between its bare and forested side by dry stone wall along the path to Sis, characterises the first impression. Opposite the high ridge, as a gravity point of the area, distinguished and accessible Predošćica with its gentle valley and the surrounding barren rocky pastures reveals open vistas of the sea and the mainland. The peak at the road extension Križić is characteristic for its sea views of eastern and western side of the island. Completely separate unit Planis creates different, hardly accessible and unfriendly ambiance with views of sinkholes in the middle of the forest. The fact that Planis is separated from the neighbouring area by a massive dry stone wall emphasizes the border between two completely different forest habitats.




Peak Sis and Gorice (highest peak of the island)
Saddle Križić - narrowest part of the island
Central ridge
Mixed Mediterranean and sub-Mediterranean forest
Sinkholes on high plateau
Village Predošćica

4.1.4. Coastal sides of the central ridge

Coasts of the central ridge are located in the north of the island. The area comprises east and west coast of the central ridge in the stretch from Veli bok bay to St. Salvador's church on the west and from Žalići bay to Kosminj cape on the east.

Relief

The area is defined by ravines on steep slopes ending in poorly developed shores, enclosing the central area on its northern and eastern side. Coastal steepness produces strong contrast within the relief structure of the area, reaching as high as 480 m above sea level. The prominent southeastern shore is subject to the structure of the upper plateau Planis. Steep slopes on the eastern side are covered with torrential flows ending in gravel beaches. Merag cave represents a specific geomorphologic structure defined by big dimensions (upper rim of the abyss is 200 m above its bottom, and its circumference is 1200 m). It was formed by precipitation of large underground caves in dolomite rocks. Numerous coastal caves with various shapes and dimensions are mostly connected to deposits of breccia**.**

Vegetation cover and land use

The area is mainly subject to natural succession of vegetation with no significant human impact - only small areas are used for pastures. Vegetation cover gradually increases in north-south direction. A dividing line between deciduous and evergreen, i.e. Sub-Mediterranean and Mediterranean vegetation is represented by the 45th parallel passing through the area. The predominant afforestation process is the result of sudden decrease of forest exploitation during '80s in 20th century. East coast is covered with impressive thick forests, especially around Merag village and Merag cave. North of Vodice and along the scree, at the bottom of the eastern side of the pass Križić, the landscape is defined by areas of rocky pastures. West coast is covered with lower vegetation and its most representative example, a rocky pasture in the first phase of vegetation succession of pioneer sorts of immortelle and juniper (*Juniperus oxycedrus L),* is located under the pass Križić. The coastline under plateau Planis is covered with macchia and holm oak. Specific remains of a dense network of dry stone walls near the pass Podkrižić are approachable by a long path along torrential flows, starting at the pass Križić.

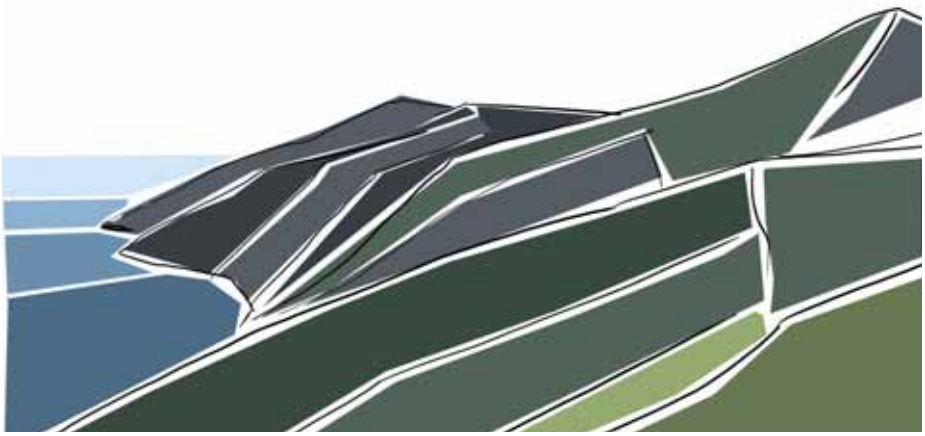
Settlements and cultural heritage

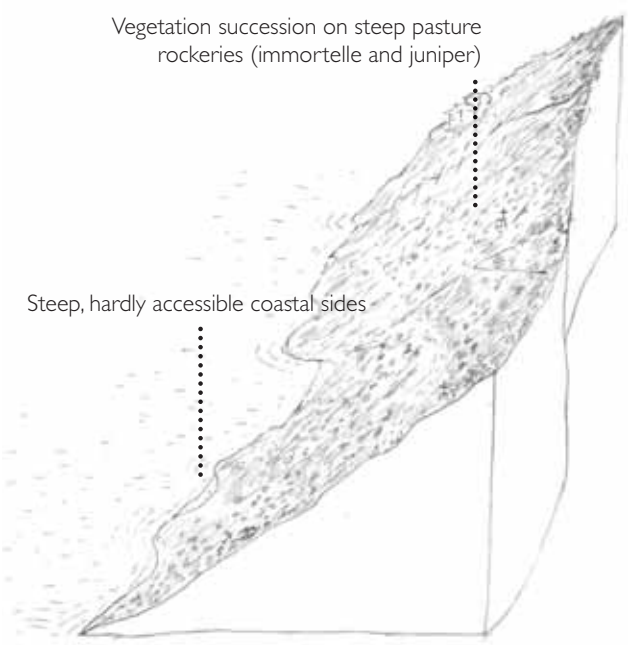
There are two villages in this area, Merag and Vodice. Merag is a coastal village located at the base of a steep slope that creates an amphitheatre around the bay, itself oriented towards the north and the ferry port. The village centre is situated on a small plateau at the bottom of the valley with some arable soil. An old winding path, wide enough for vehicles, traditionally connected Merag with Cres, while today it is used only for recreational purposes. It passes the cemetery and St. John's church, as well as the remains of the church and the hill fort of St. Bartholomew.

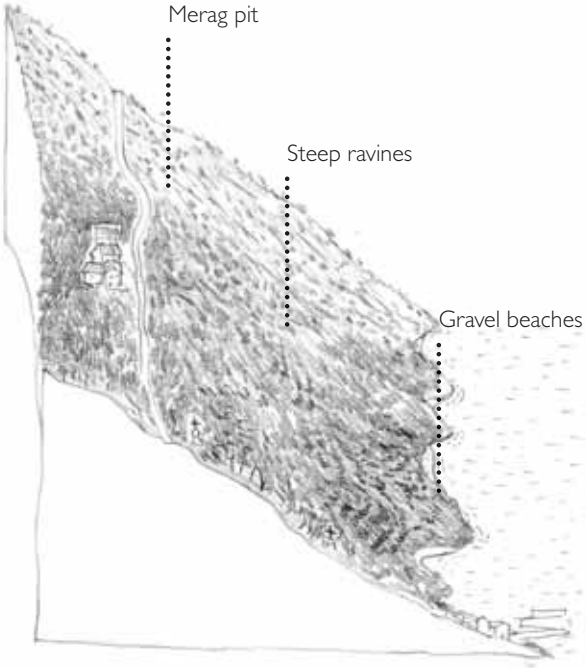
Village Vodice is located at the bottom of a steep slope and it comprises only several longitudinally aligned houses. Its origin is connected to a nearby well, a fact confirmed by its name. Several barns and remains of the fences around traditional pastures and cultivated plots are located in the valley at the bottom of the village. Apart from already mentioned churches around the village Merag, this area is characteristic for its St. Salvador's church and shepherds' dwellings in Veli Bok and St. Blaž.

Scenery

The area is linear and elongated, enclosing both sides of the island. Impressive vistas of the coast are displayed from the higher points of the ridge. A cultivated peak at the 45th parallel on the main road reveals views of the east coast and Merag bay and Merag cave. Panoramic views of east and west coast open next to the road extension Križić. The main impression of the area is characterized by its extreme cliffs that transcend a sense of force of natural processes, inaccessibility and inhospitality. The main accent in the area is represented by Merag cave.




Vegetation succession on steep pasture rockeries (immortelle and juniper)
Steep, hardly accessible coastal sides


Merag pit
Steep ravines
Gravel beaches

LANDSCAPE AREAS:

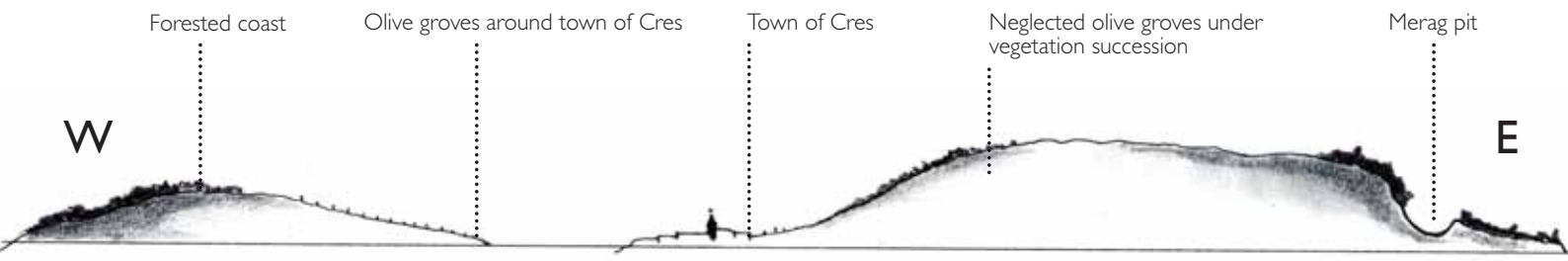
The Cres valley

Hilly terrain of the Cres hinterland

Coastal side of the Valun bay

"It's hard to work here. You have to do it by hand, the terrain is rough. I think that Cres people really love those olives again, those old olives, because that old olive is... people say that olive is a mother, and vine a girl." (Valun inhabitant)

"Me and granny, we'd go at 2 am, so at 4, 5 in the morning we'd be set to shear 10-20 sheep and then at 11 come home. It's done, that was your day and not to go at 11 and then... It took 2 hours on a donkey, like you were a cowboy along these old paths. I knew those paths, I'd walk them in the middle of the night without moonlight, and I'd still do it." (D. K.)



Cross-section of the landscape unit of the town of Cres

IMPRESSIONS AND VISUAL EXPERIENCE

- Amphiteatrical, spacious and visible area of enclosed bay
- Steep, unapproachable and forested bay sides
- Vast and dynamic relief mosaic of small wetlands, forest vegetation and abandoned fragmented dry wall parcels (barbakani)
- Anthropogenic spacious bay sides: preserved traditional elements in a form of olive groves fenced by dry walls and old town core
- Pastel facades of the houses in the town of Cres and the painted dock

SENSITIVE MAP

4.2.1. The Cres valley

The defining element of this area is its anthropogenic landscape, with low submerged valley and the coastal town surrounded by dry wall terraces of olive groves.

Relief

The boundaries of the Cres valley are defined by a geomorphologic form of submerged valley, forming an amphitheatre around the coast. The relief is continuously descending towards the seashore, with different inclines (from just a few to 100 %). These conditions create a closed and protected complex that facilitated development of the biggest island town, and the biggest homogenous agrarian zone, as well.

Vegetation cover and land use

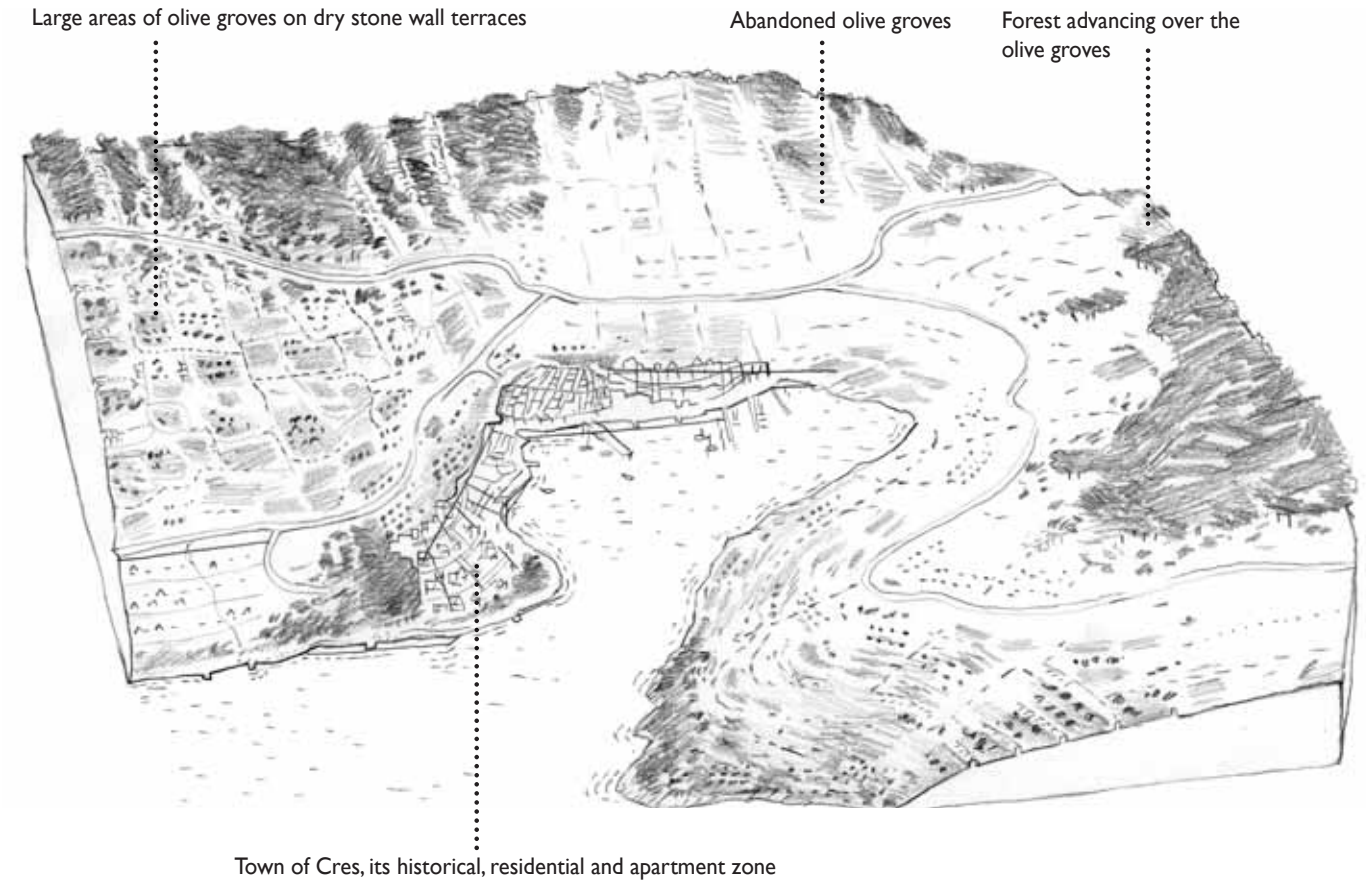
Land use is predominantly defined by olive groves that are planted on dry stone terraces along the slope, from its highest parts all the way to the sea, enclosing the valley and the town. Long history of olive cultivation is evident in preserved traditional parcellation and dry wall fences around olive groves. Depending on the incline of the slope, the area is defined by regular terraced groves and irregular fenced clearings, with megalithic outer and smaller inner dry walls. Systematic subdivision bears witness to their initial purpose - vine cultivation during vine conjunction. Dry wall network is intertwined with regular network of old paths used by people, cattle and vehicles. Some dry walls are being removed in order to extend existing roads or to build new ones to enable passing of cars. Cres olive groves are nowadays famous for their extensive character and combined agro-pastoral purpose, since they are used for cattle grazing that keeps the soil clean from weed. Olive groves on higher altitudes and in areas distant from the town are abandoned and overgrown with natural vegetation, and even alpine pine can be found near the shore. The south side of the Cres valley is defined by specific and sensitive micro-locality Piskel, comprising characteristic shallow, sandy and fertile bay convenient for vegetable growth, and wetland habitat with its specific vegetation.

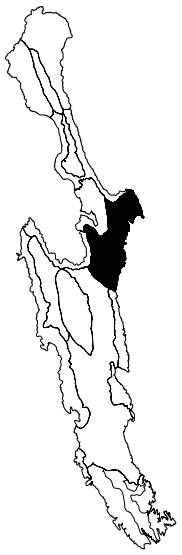
The town of Cres

The town of Cres is located in the central lower part of the valley, next to the coast. It is organized around its historical core (from the times of Venetian administration) that encloses the main bay in a shape of a square block, with irregularly fragmented matrix. It is followed by zones of newly built houses and holiday houses, a newer industrial zone and spacious separate camping site. Those areas do not interfere with the ambiance of the historical core, but they do divide once functional and structural unity of the town and its agrarian zone. The town is nowadays mainly oriented towards tourism, which is evident in its expansion along the coastline and in numerous touristic facilities that block the views of historical facades.

Scenery

The area is visually defined by large proportions, but also by a sense of isolation enhanced by steep slopes on its sides. Preserved historical elements in a form of olive groves fenced by stone dry walls and old town core are the basis of its of spatial identity. Further from the town, the zone of olive groves displays its full strength. It is revealed in cultivated and clear parcels with high olive trees, megalithic stone dry walls and enclosed paths. The whole area gives an impression of mosaic spaciousness, visible from most points on the main road; Starganac peak, water supply path to Valun and *Napoleonic path* towards Predošćica. Ambiance is visible from "within" as well, because olive groves are passable, accessible and cultivated. Panoramic views of the town harbour surrounded by houses in different colours and the painted dock are revealed from Dražica bay. A pleasant promenade along the bay, in a stretch from the green lighthouse to Gavza bay, repeatedly displays new views of the opposite side of the valley.


Large areas of olive groves on dry stone wall terraces
Abandoned olive groves
Forest advancing over the olive groves
Town of Cres, its historical, residential and apartment zone



4.2.2. Hilly terrain of the Cres hinterland

This area represents an interactive zone within which it is possible to detect all typical island activities and succession of juniper forest (*Juniperus oxycedrus L.*), as a direct consequence of abandonment of pastures. Peninsular character, indented relief and southeast orientation towards the sea distinguish this landscape from all other areas.

Relief

The area is defined by limestone, slightly wavy plateau that continuously descends towards the sea. Light undulation is defined by the interchange of the ridge (peaks from 190 to 370 masl) and the valleys, and the high energy of the terrain is increased by sinkholes and alluvial torrents within the coastline. A distinguished fault valley in NW-SI direction connects village Merag and deep valley Krušćica. Laid coastal side with east and southeast exposition is dissected by torrents that sporadically create hidden gravel beaches.

Vegetation cover and land use

The whole area is defined by tall vegetation (forest and macchia), combined with the remains of vegetation suitable for grazing or with abandoned terraces and clearings. Diversity of stone dry wall structures indicates extraordinary complexity of land use in this area, which can only be seen on old aerial photographs and historical cadastral maps. In the north, a distinguished peninsula (the area of Veli Kus and Mravinac) preserved its pastoral purpose, indicated by a vast irregular pattern of parcels fenced by dry walls and somewhat rare vegetation (recently completely bare). This area is specific for its scattered oases of karst depressions used for agriculture and sheep shelters. Spacious area extending south of the Merag-Cres road all the way to village Loznati is overgrown with high vegetation, hiding vast surfaces of fragmented dry wall parcels (*barbakani*) oriented towards the sea. They are probably plots cultivated during the vine conjunction. By the distinguished intensity of its dry wall structures this area stands out in comparison to other Cres areas, or any other area for that matter. The third unit comprises the area between Loznati and Orlec, specific for the complex structure of its dry walls, wherein regular *barbakans* are intertwined with oval fenced sinkholes and square pastoral parcels. These structures are equally overgrown and therefore incomprehensible in the landscape.

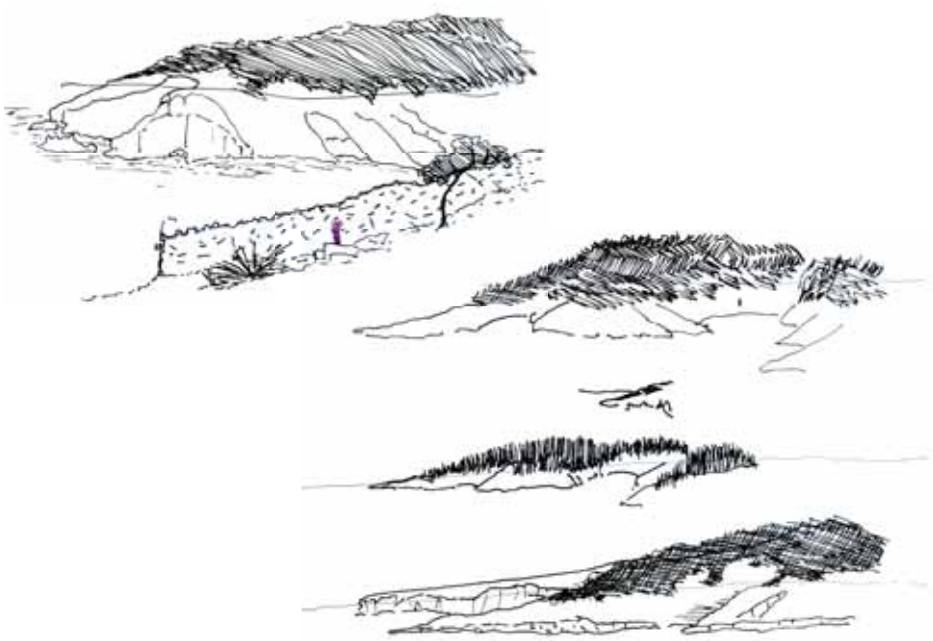
Settlements

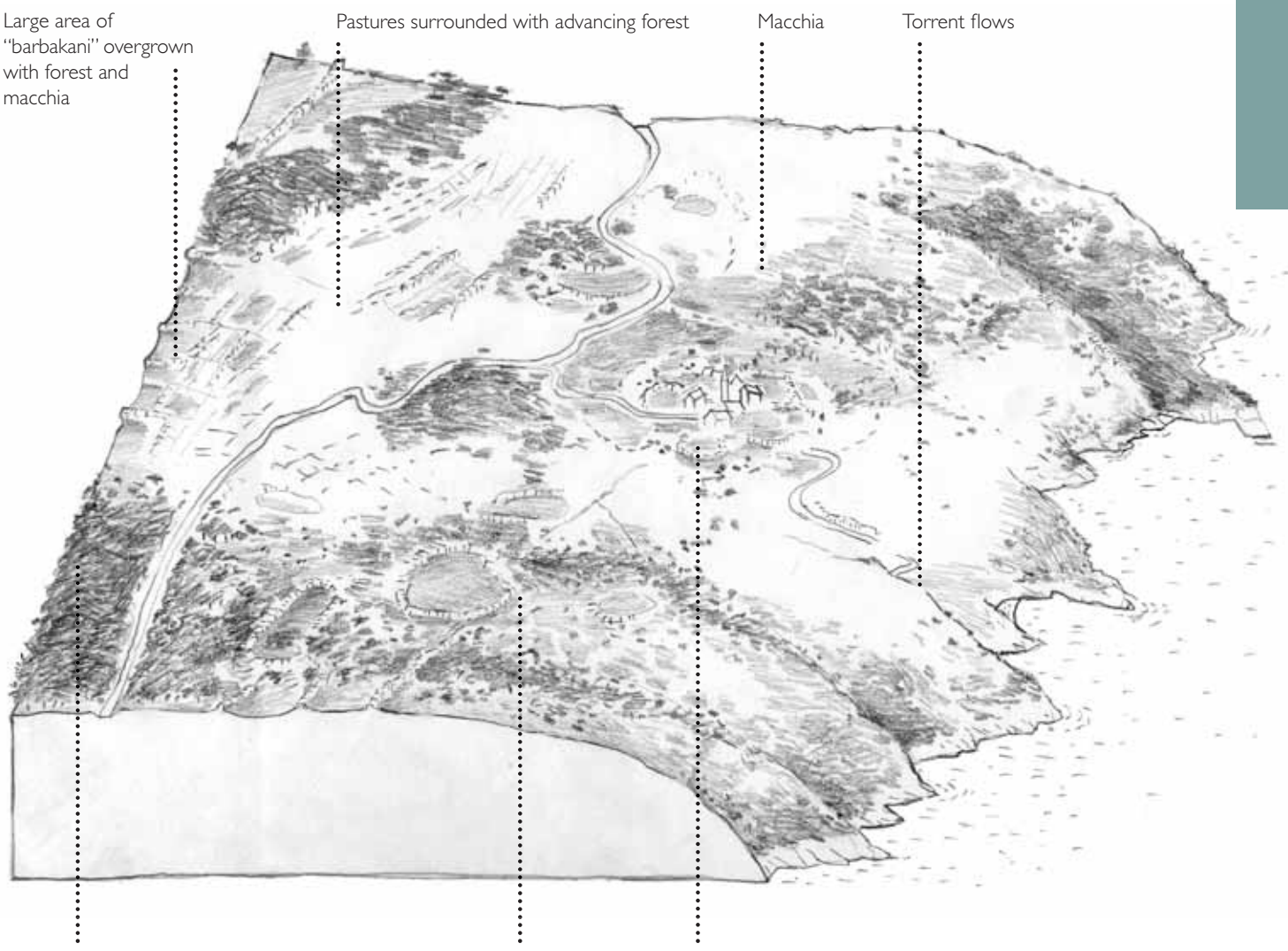
There are two settlements within the area, Loznati and Krčina. It is believed that their names are connected to traditional trades: grapevine and the complex of adjacent clearings. They are both in the hinterland, perched on hills above little valleys. Village Loznati comprises around thirty houses, many of which have lost their traditional architectural characteristics, because of contemporary materials used during renovation. Small structured gardens and orchards surround it. Traditionally functional rural complex that encapsulated the wide belt of mixed agricultural land is almost unrecognizable today. Village Krčina comprises only ten houses.

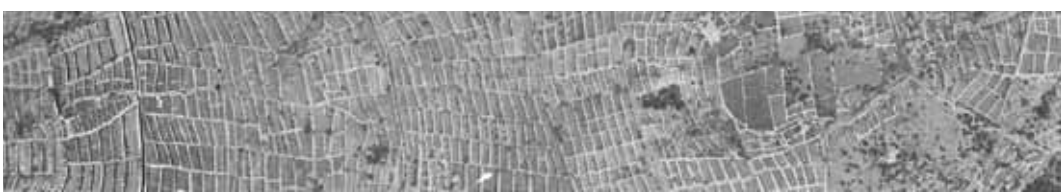
The area is connected by the main island road bypassing it in the north-south direction, and by its extension towards the ferry port and village Merag. Both villages are connected to Cres by old paths paved with stone pebbles and enclosed by larger stone blocks, today used for recreational purposes.

Scenery

Extremely complex dry wall structure of this area is almost incomprehensible within the space_due to abandonment of agriculture and vegetation succession. The first visual impression is therefore characterised by the forest cover, "naturalness" and dynamic terrain. There are no panoramic views from inland. Short views from Krušćica bay and long views from the cape Tarey characterise the area. Particularity of the cape starts with the path through the tall forest, creating impressions atypical for the karst island, and ends with pointed, almost separate form, covered with marsh vegetation. It reveals views of nearby island Plavnik and Velebit mountain. Interesting micro-localities of local and historical character are predominantly situated along macadam paths, and are represented by stone dry walls enclosing pastures and agricultural parcels, sheepfolds (*mrgari*) with wooden latticed gates *(lese)*, ponds with great biodiversity and abandoned shepherds' dwellings. They can also be associated with arable karst depressions that are strongly contrasted to the surrounding forest. Sporadic panoramic views towards east coast and islands open from the Cres-Merag road.




Large area of "barbakani" overgrown with forest and macchia
Pastures surrounded with advancing forest
Macchia
Torrent flows
Mixed forest
Ponds and cultivated sinkholes
Settlement above the coastal side with adjoining neglected cultivated area



4.2.3. Coastal side of Valun bay

This area comprises forested coastal slope and gravel beaches of the largest bay on the island. Its longitudinal reach creates a saddle directed towards north, connecting two capes, Križice and Pernat.

Relief

This area is defined by a steep coastal cliff, enclosing the bay in a V shape (Valun bay is genetically a large submerged dolomite valley). Numerous torrential flows created beaches and coastal plains along distinctive cliffs, especially at pointed capes like Pernat, Crnikova and Buc.

Vegetation cover and land use

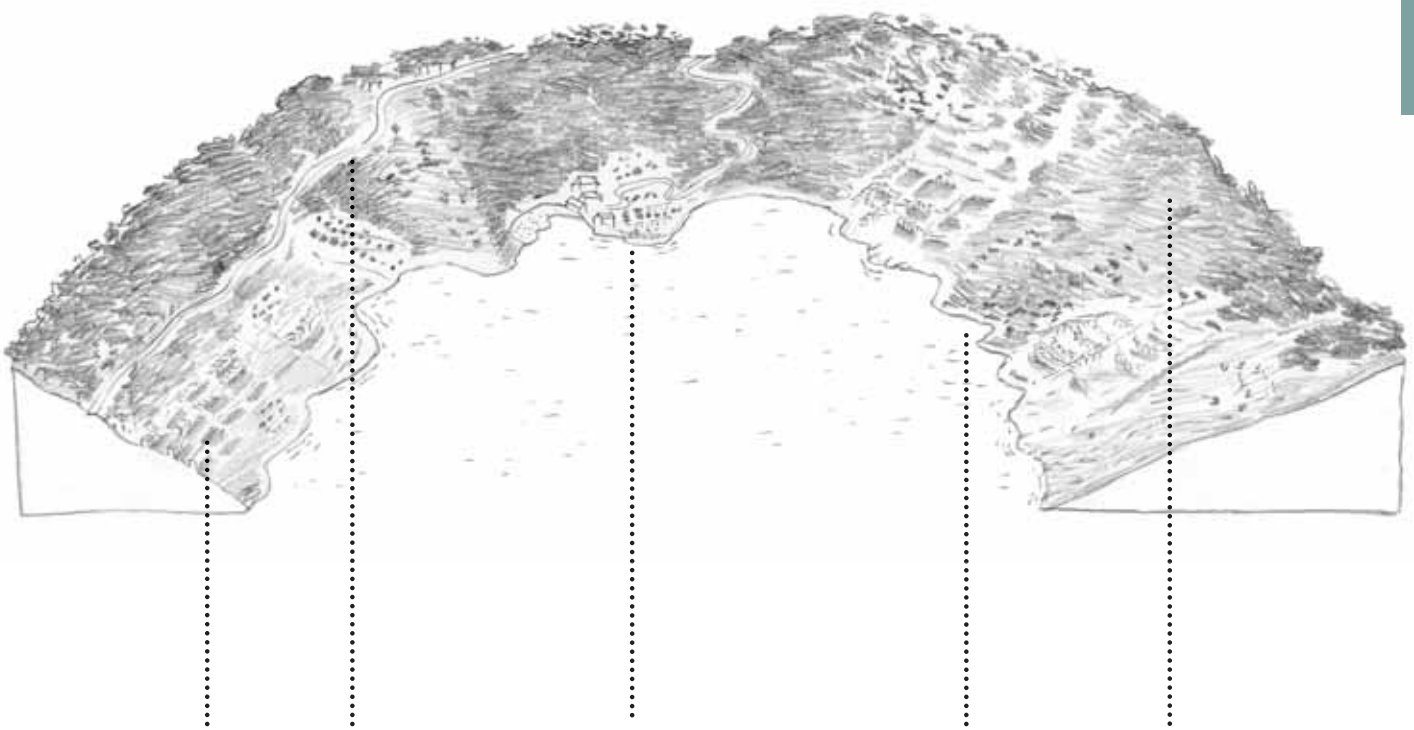
Characteristic landscape composed of numerous terraces indicates that the land was traditionally cultivated with olive groves and vineyards. Old aerial photographs reveal the original structure of terraces, represented by the regular parallel pattern of stretches and squares of dry wall parcels, that interchange dependent on the incline and the initial growing culture (it is presumed that initial terracing of the terrain occurred during vine conjunction, and the regularity thereof indicates that the purpose was viticulture). Such land use is evident only in the remains of the terraces overgrown with thick forest of holm oak and macchia. Some of the abandoned vineyards have been revitalised, but due to difficult approach and steep terrain, they did not expand, so there is no significant influence upon landscape. This predominantly natural landscape includes only one village, Valun.

Architectural heritage and settlements

Valun is a small picturesque fishing village hidden in Dovica bay (its antecedent village of Bućev is located at the plateau above Valun). The central area of the settlement is linear and dense along the coast, while its smaller part is scattered among olive groves on the hillside. The economy was traditionally based on olive and vineyard cultivation, fishing and wood export, while nowadays inhabitants are mostly oriented towards tourism, which is evident in renovated apartment facades and gardens. The area is dominated by tall houses, narrow stepped paths and streets decorated with Mediterranean plants. Above the cape Pernat there is Grabrovica, an extremely valuable shepherds' dwelling complex composed of master's flat (*palac*) and shepherds' and locksmiths' dwellings. Its ground plan reveals all the features of the town. Although extremely valuable, Grabrovica is abandoned and is deteriorating. The shepherds' dwelling Barbarova Draga is about 90 m off the coast, in the bay of the same name. Olive groves below were renewed. Other culturally relevant sites are the parish church Gospe od ružarija and Palac house in Valun and St. George's chapel. Parallel to the coast, along the whole area, a macadam path (water supply line) connects Valun and Cres bay.

Scenery

The bay area is secluded, but big, very spacious and visible from the points lined up at the local road. One of them is peak Carpe Diem, located above the central part of the bay, which offers the best panoramic view of the coast and the bay. It displays balanced image of the space, specific for the interchange of strong contrasts of forested cliffs and the sea, voluminous relief and sea surface. Thick vegetation cover, strong relief energy and sea views evoke a sense of naturalness. Nevertheless, remains of stone dry walls still dominate the scenery, with sporadic glimpses of active agricultural parcels. Shepherds' dwelling Grabrovice opens views of the town of Cres and east coast of Valun bay.



Remains of the dry stone walls around the bay and rare active olive groves

Renewed old path

A picturesque fishermen and tourist village with two gravel beaches

Hidden beaches

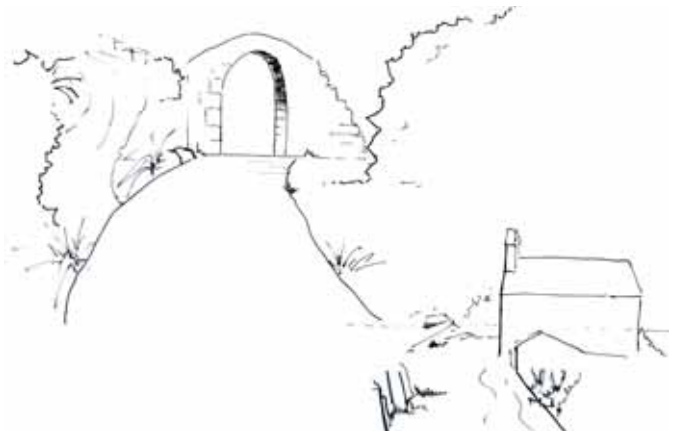
Mostly inaccessible side of the bay

4.3. LANDSCAPE UNIT OF "ZAPADNA BANDA"

LANDSCAPE AREAS:

The high part of the Gerbin area

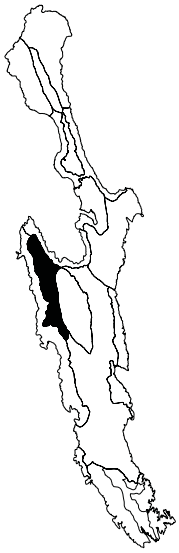
Forested west coasts



"They all say it's beautiful. Yes, it's pretty, views are pretty, air is clean and healthy. But the hard life (...) People used to cut all of this, it was clear, we had everything here ..." (Lubenice inhabitant)

IMPRESSIONS AND VISUAL EXPERIENCE

- Extremely steep and unapproachable coast with secluded coastal settlement
- White gravel beaches and scree in contrast to mixed forests within the cliffs
- High panoramic views of open sea
- Insular and isolated peaks with abandoned and archaic villages
- Western exposition, sunsets that colour the landscape into a spectrum of orange and intense red shades



4.3.1. The high part of the Gerbin area

This area's unique insular character is represented by its elevated terrain that is almost completely enclosed by the sea and the lake, while the small settlements with adjoining cultivated valleys located within vast pastures reveal its purpose.

Relief

The area is defined by the top of the hillside block comprising elongated ridge (with its highest peak Helm at 483 masl) and parallel spacious dolomite valley at the bottom of the ridge (Podol) extending along the eastern side of the block. Northern area (the top of Pernat peninsula) is flat with numerous sinkholes, while the area next to Lake Vrana has more undulating character, evident in the interchange of its valleys, slopes, and more indented cliffs towards the lake.

Vegetation cover and land use

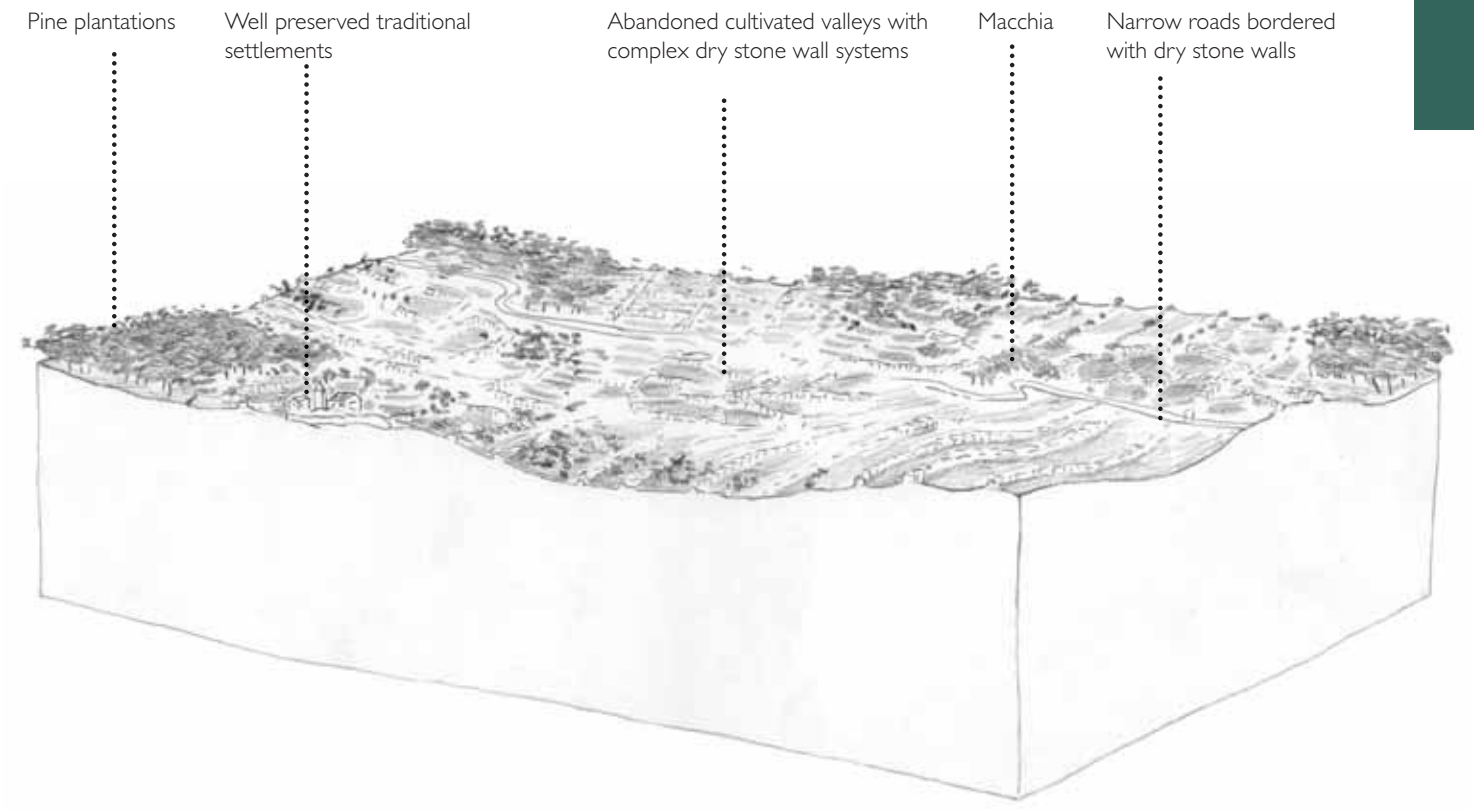
The whole area is characterised by a complex structure of stone dry walls implying diversity in land use. The ridge and all its exposed and elevated parts are characterised by pastures, represented by rare vegetation and dense parcellation by elongated square stretches of dry walls. Managed pastures are visible in lower, more protected parts. They are richer in vegetation, but the parcellation system is more irregular and fragmented. It is assumed that traditional communal pastures were located in more exposed, bare areas. The same areas were later subject to black pine afforestation during the Austrian administration (outskirts of Lubenica and Zbičina). The lowest parts, larger valleys with adjacent slopes were used as terraced surfaces of arable land. They were enclosed by fragmented dry wall patterns and were the basis of development of rural complexes (villages with surrounding agricultural areas). They are mostly deserted nowadays or used as pastures.

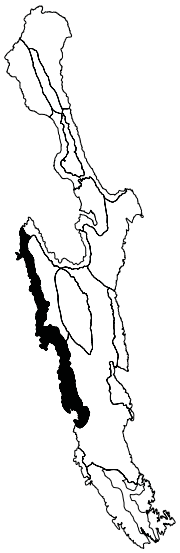
Settlements and old paths

Smaller rural complexes Pernat, Zbičina and Mali Podol are located along the eastern rim of the valley. They are semi-compact, perched above cultivated valley, characterised by various patterns of parcellation. Pernat is the most indented settlement within the area. It is characterised by the central square with the church at the entrance of the village, with streets extending from that point. Traditional matrix and architecture are preserved, but the houses have obviously been abandoned. Zbičina is also characteristic for its authentic (deserted) architecture. However, facades and dimensions of recently built apartments are discordant with the ambience. Mali Podol is the smallest village comprising only several houses. Traditional architecture dominates, and the existing touristic facilities are harmonious with the surroundings. Lubenice is the village that stands out by its dimensions, location, architecture and history. It is located on a narrow elongated ridge that collapses towards the sea on the western side, and its eastern side extends into abandoned fertile valley. It is a compact settlement with the central square at the entrance of the village. It has completely preserved its traditional urban-rural structure and as such is on a tentative list of UNESCO World Heritage Sites. Recognizable elements of its cultural heritage are chapels, prehistoric hill forts and traditional stone piles on elevations. A narrow road that is fenced by dry wall for its most part connects all of these villages. The same road connects north and south part (towards Grmovo), but is not suitable for vehicles. Village Grmov is characterized by only a few stone houses characterised by traditional architecture, with enclosed gardens and a smaller vineyard. Several complex stone traditional houses, in its original form, completely subject to vegetation, define shepherds' dwelling Bertulčići. There are two more shepherds' dwellings nearby: Veli Podol and Vršići.

Scenery

Enclosed by the sea and the lake, in addition to its "elevated" position, this area appears insular and isolated. Due to poor interconnections and diversity of relief and vegetation, the area can be divided into two units: northern and southern. South part is somewhat lacking in vegetation and has greater relief energy, therefore better visibility. It is easy to distinguish different patterns of dry wall structures and contrasts between karst elevations and fertile valleys (north of Grmov). There are also powerful spatial contrasts represented by bare and forested areas and fertile enclosed valleys that are most representative in this area. The area is defined by views of valleys, sea and lake, and it is recognisable for its village Lubenice. It gets more enclosed, isolated and concealed towards north. Narrow enclosed paths open only inland views, characterised by details of vegetation, dry wall structures and wooden fences. Impressions of the north part are best represented by villages Zbičina and Pernat with their surroundings.


Pine plantations
Well preserved traditional settlements
Abandoned cultivated valleys with complex dry stone wall systems
Macchia
Narrow roads bordered with dry stone walls



4.3.2. Forested west coasts

This area comprises the central part of island's west coast, from Grabrovice bay to Mikalj bay. Even though there are two coastal types, steep and forested and mildly laid and inhabited, the whole area is protected from bora and exposed to mild western maritime influences.

Relief

Two subunits can be differentiated within this area. The first, north unit comprises steep slopes in a stretch from Grabrovice bay to Koludara cape (adjacent to Martinšćica bay) along the contour line at 300 masl. The south unit comprises low coasts from Martinšćica bay to deep bay below village Ustrine. Geological components of the rocks cause these differences. Porosity and permeability of stone surfaces (mixed limestone and dolomites) enabled greater erosion of the terrain, developing spacious bays and mild slopes along low indented west coasts. In the north area, non-erosive, predominantly limestone karst created indented coasts dissected by distinctive geomorphologic forms like escarpments, ravines, alluvial terraces and scree. Torrential flows deposit stone, gravel and sand, ending in beaches at the base of limestone slopes.

Vegetation cover and land use

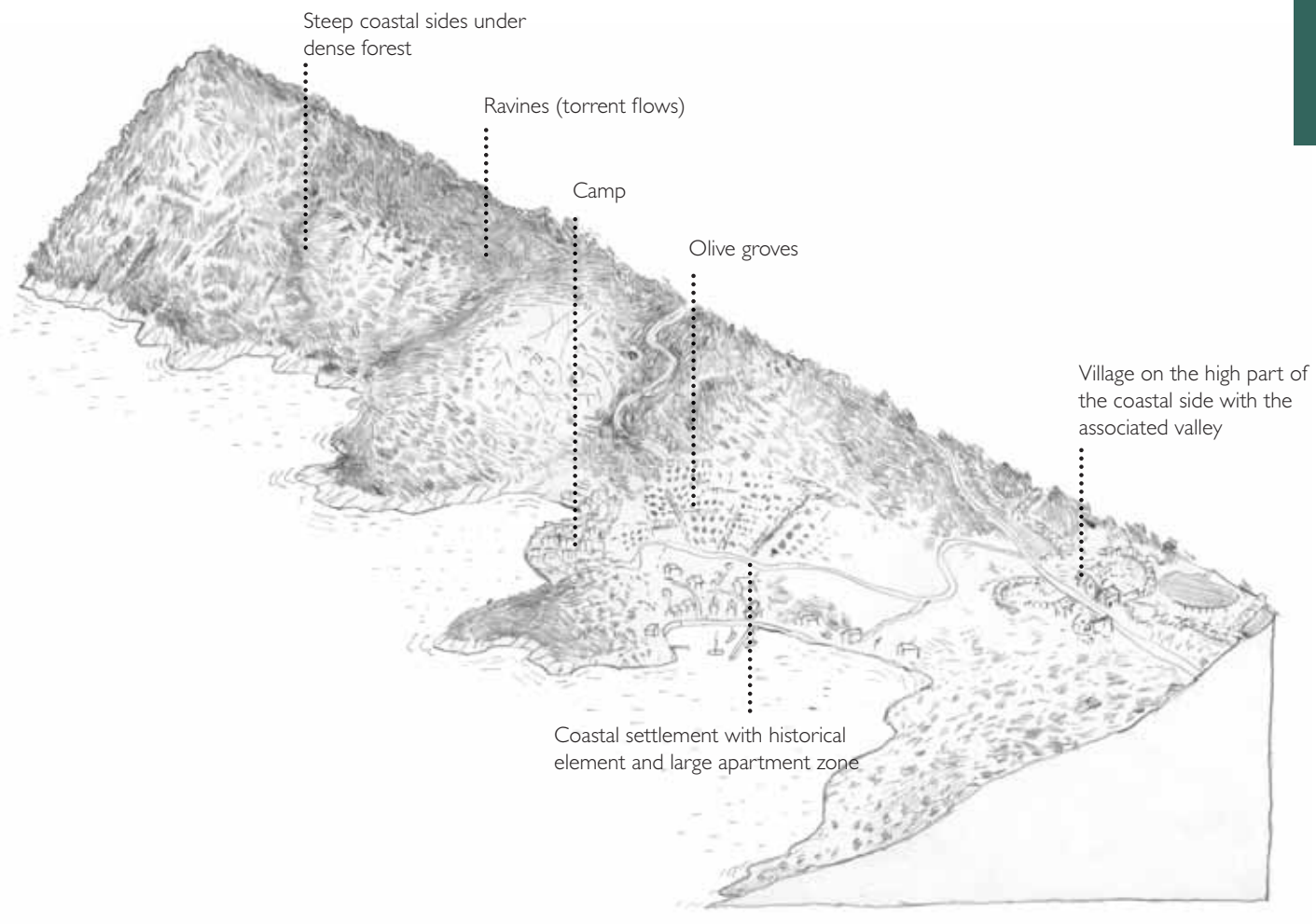
Steep and inapproachable terrain was the reason why agriculture was abandoned here long before it happened to neighbouring areas. Therefore, this area is predominantly characterized by natural vegetation and scree, covering complex dry wall structures that represent the diversity of traditional land use. Forests dominate the area. Mixed deciduous and evergreen thick forests characterize steep shores north of Martinšćica, while southern half reveals a combination of forests and cultivated areas. Although predominantly abandoned, these surfaces are clearly visible and integrated into typical spatial structure of the wide rural complex of Stivan. Here, the settlement is located on the top of the cultivated valley. The slopes are parcelled by dry stone fences and terraces, and the wider surroundings defined by large pastures fenced by dry walls. Traditional forest management and controlled exploitation can be detected in traces of topping (*pedalenje*) of oak trees. Plantations of black pine are located above Martinšćica.

Settlements and architectural heritage

Apart from the marked trail along the scree, leading below Lubenice, it is difficult to reach the north part of the area. Consequently, there are no settlements here. South area is sheltered from bora and characterized by low shores and arable soil. It enabled development of six settlements. Roman sites in Miholašćica and Ustrine bear witness to long history of land use. Settlements of this area are located within wide dolomite amphitheatrical bays or at the adjacent slopes. Although all of them are maritime, only two are completely located along the coast (Martinšćica and Miholašćica). Other settlements (Vidovići, Stivan, Zaglav and Ustrine) are located at the slopes and by their orientation belong to the group of inland settlements. All the settlements are connected to the adjacent bay by serpentine steep paths. Touristic infrastructure is evident in all the settlements and has the greatest impact on the spatial character. Martinšćica is defined by its 500 m long gravel bay and by interesting arrangement of the houses that are predominantly located along its rim ("on the beach"). The centre is defined by medieval church, convent and citadel. The village extends along the coast by its camping site and towards inland by a hotel. Ustrine is a picturesque little village perched high above the bay and was traditionally a fishing village. Zaglav is a terraced apartment village, with no traditional value, and is active only in the summertime. Other settlements do not insist on new constructions, but are inclined towards renovating and conversion of old autochthone houses into harmoniously incorporated accommodation and hospitality facilities.

Scenery

Due to its western exposition, sunsets colour this area in spectrum of orange and intense red shades. Most locations open high panoramic views spreading towards open sea and island Zeča. Inland views are no less attractive, opening from coastal settlements towards the bay and the surrounding coastline, evoking a feeling of safety and spaciousness. White gravel beaches are contrasted to mixed forests in the northern hinterland, creating a sense of wilderness and isolation. Transition of seasons is here more intense than in other areas. Summer dynamics and large number of tourists interchange with windy and cold wasteland in the winter.

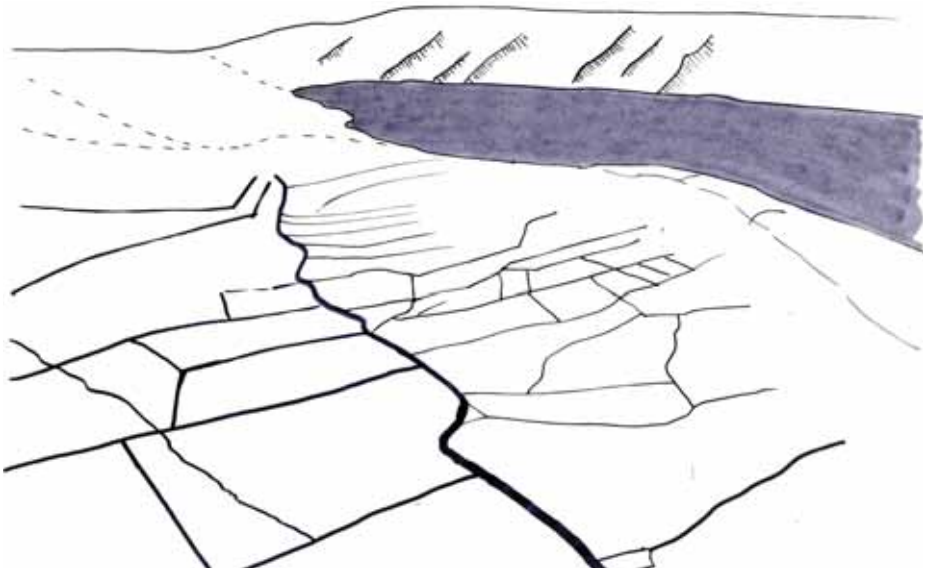

Steep coastal sides under dense forest
Ravines (torrent flows)
Camp
Olive groves
Village on the high part of the coastal side with the associated valley
Coastal settlement with historical element and large apartment zone

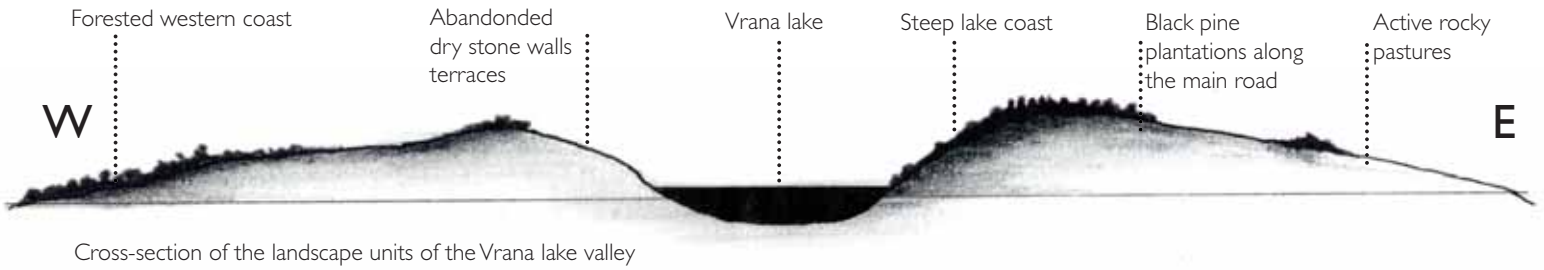
4.4. LANDSCAPE UNIT OF THE LAKE VRANA VALLEY

LANDSCAPE AREAS:

Vrana lake valley

"There aren't many people, you can get lost, hide." A.M.





Cross-section of the landscape units of the Vrana lake valley

"I'm calm and active here." I.S.

IMPRESSIONS AND VISUAL EXPERIENCE

- Calm water surface within the depths of karst depression
- Spaciousness and panoramic vistas revealed from all lake sides
- A sense of naturalness, seclusion and tranquillity
- Radical torrents
- Secluded shepherds' dwellings, abandoned villages and chapels

4.4.1. Vrana lake valley

The valley of Lake Vrana, located in the central part of the island, stands out as a separate zone, not only as a karst hydrogeological phenomenon, but also because of the great significance it has for the whole Cres - Lošinj archipelago as a reservoir of drinking water.

Relief

This landscape area is represented by elongated oval submerged karst valley (10 km long and 2-3 km wide), comprising the lake itself, two equally inclined, longitudinally placed coastal slopes and long and deep ravines at its narrow sides. Its boundaries are defined by confluence area at a height between 200 and 300 m above sea level. The coast is poorly indented and characterised by several bays, capes and beaches. The north and the south ends of the lake are defined by a low coast, a consequence of torrential flows (*drage*). Flat ravines are formed at its estuaries. Permeable north zone is filled by stone debris and is therefore passable. The south end is characterised by wetlands and hydrogenic soils covering the spacious area of Poje.

Vegetation cover and land use

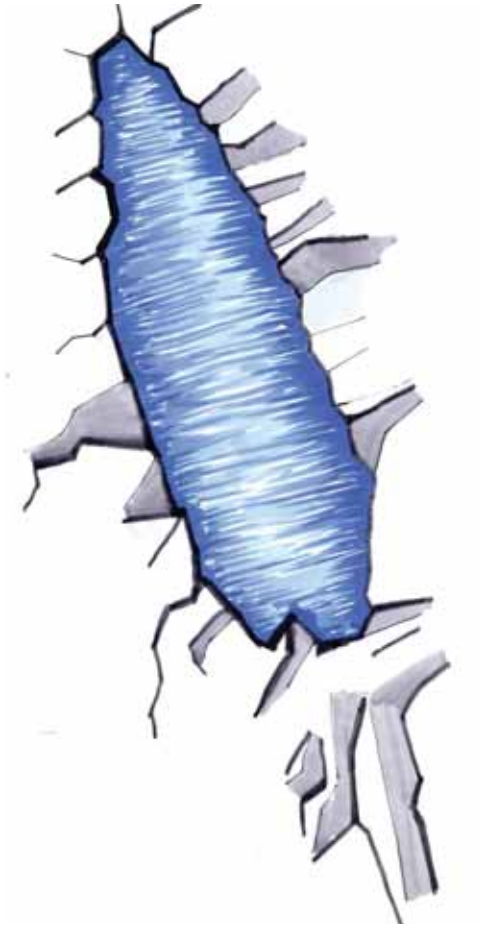
Pastures (active and neglected) and thick mixed forest define this area. The two opposite lake sides differ by their predominant vegetation cover and land use. The west side, has been, and still is recognizable for its rocky pastures parcelled with long stretches of stone dry walls along the slope. Forests that have been preserved due to steep slopes define eastern and western coastal sides; there are still very old tress of holm oak, downy oak, ash and mock privet. Upper west side, along the boundary of this area, is characterized by the remains of agricultural lots (orchards and vegetable gardens), visible in various terraced structures and stone dry wall fences. Sheep breeding and fishing traditionally characterized the area around Lake Vrana, while today it is primarily protected as a source of water supply with restricted accessibility, consequently subject to natural processes and sheep grazing. With the existing protection, the Lake has been proposed for special protection as a special reservation of regional significance.

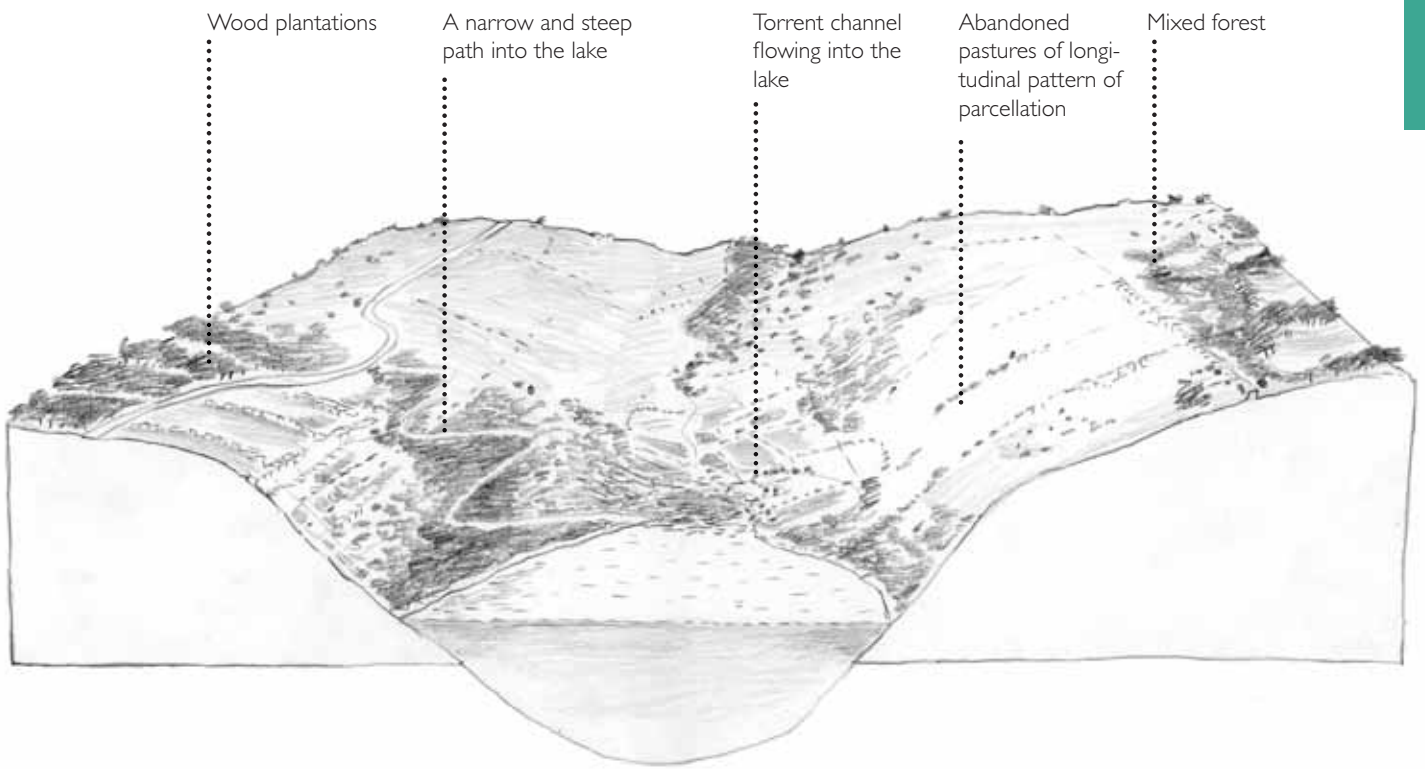
Architectural heritage

Extremely steep slopes prevented development of larger settlements. Only the ruins of villages, shepherds' dwellings and several chapels can be detected today. All the villages are located on the east side; villages Zbišina and Stanić are completely abandoned, unlike Vrana, still inhabited by few residents within its scattered authentic houses. Terraced structure of Zbišina, situated in the forest on eastern slopes of the valley, comprises three shepherds' dwellings and St. Aloysius chapel. Ruins of the houses are presently used as sheep shelters. Stanić is a compact village, comprising five to six traditional houses, located on a clearing, enclosed by a forest. Even though there are no permanent residents, the village is oriented towards seasonal sheep breeding and agriculture.

Scenery

This spacious area is characterised by spaciousness, panoramic vistas and steep territory. Restricted accessibility evokes a sense of naturalness, isolation and tranquillity. Defined by large dimensions and calm water surface within the depths of karst depression, the area conveys atypical ambience and high level of particularity. It is enhanced by the strong tonal contrast between intense deep blue colour of the lake and its surrounding vegetation. Representative zones within the area are clearly defined: forests, pastures, coastal marshes, wetlands and coastlines, depicting a rather simplified first impression of the area. But prolonged presence reveals the complexity of the scenery, primarily represented by harmonious relations between natural (vegetation, relief density, water) and anthropogenic (villages, dry wall fences, clearings, sinkholes, pastures) landscape elements, as well as its specificities like shepherds' dwellings, deserted settlements and chapels. The area can be reached by several eastern and western macadam paths.




Wood plantations
A narrow and steep path into the lake
Torrent channel flowing into the lake
Abandoned pastures of longi-tudinal pattern of parcellation
Mixed forest

4.5. LANDSCAPE UNIT OF THE CENTRAL PASTORAL PLATEAU

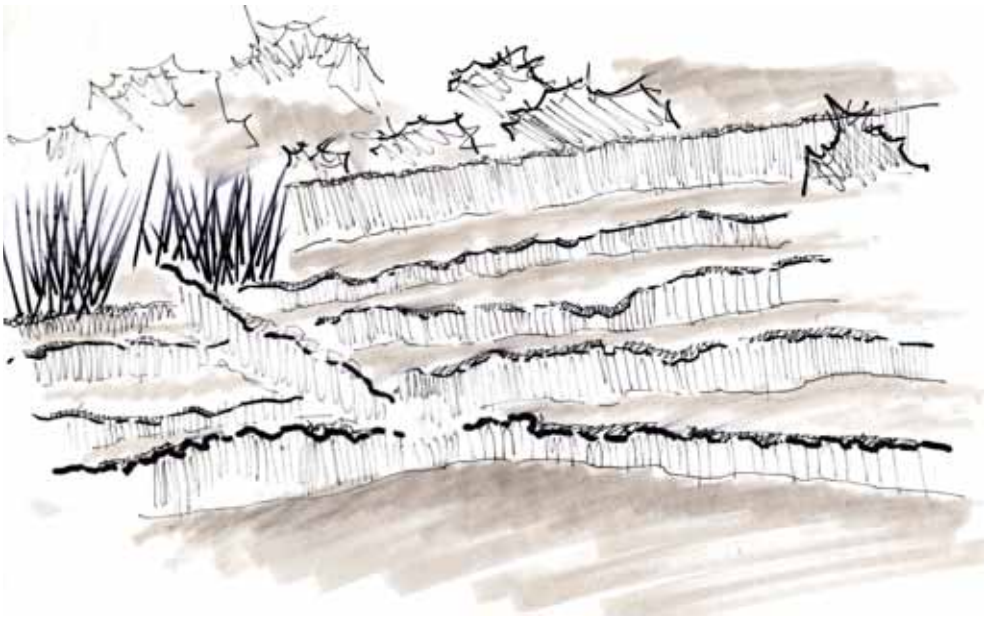
LANDSCAPE AREAS:

Central rocky pastures

Barren pastures of the eastern coastal side

"I used to milk eighty of them, sheep a day. Eighty... I couldn't move my hands!" (M. M.)

"We had vineyards, made wine and then the cheese, the best there is, when you'd put, we used to do that, pomace, those pomaces, we call them bran, and then press the grapes, pour out wine, and then what's left. And then they would, and there, put cheese, so it would get flavour and colour, or put into olive oil in stone depository. It should all

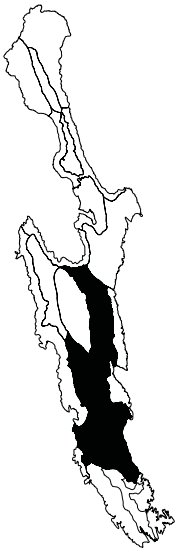


Cross-section of the landscape unit of Central pastoral plateau

IMPRESSIONS AND VISUAL EXPERIENCE

- Spacious and clear pastures parcelled with long stretches of stone dry wall
- Harsh natural conditions
- Recognizable image of bare white rockery with scattered grey and green grasslands and irregular forms
- Seasonal interchange of red, yellow and green vegetation
- Round cultivated sinkholes represent spatial accents within white rockery
- Elevated hummocks with perched dwellings and churches
- Intertwined shepherds' paths

SENSITIVE MAP



4.5.1. Central rocky pastures

This area comprises the central part of the island, i.e. its largest pastoral surface, and today is recognized as the most representative area connected to sheep breeding orientation of island inhabitants. Omnipresent sheep breeding has left its trail throughout the area; represented by long strips of stone dry walls around rocky pastures in different stages of vegetation succession, active rural complexes, desolate shepherds' dwellings, isolated chapels and fenced wide puddles.

Relief

Seemingly uniform plateau is slightly wrinkled by its shallow wide valleys and low elevations. The most significant valley is Hrastan–Belej–Srem, and the highest peak is Bojnak (224 masl). The north plateau, including the surrounding landscape belt, encompasses inland of the island, while in the south part, due to decreasing steepness, the plateau extends into the shore, so its borders go all the way to the sea. West coastline is low and mild with several beaches, while the eastern is steeper with ravines and therefore indented bays. The whole area, especially its south part, is characterized by numerous little (cultivated) sinkholes with average diameter of 50-80 m, representing one of the most important landscape elements.

Vegetation cover and land use

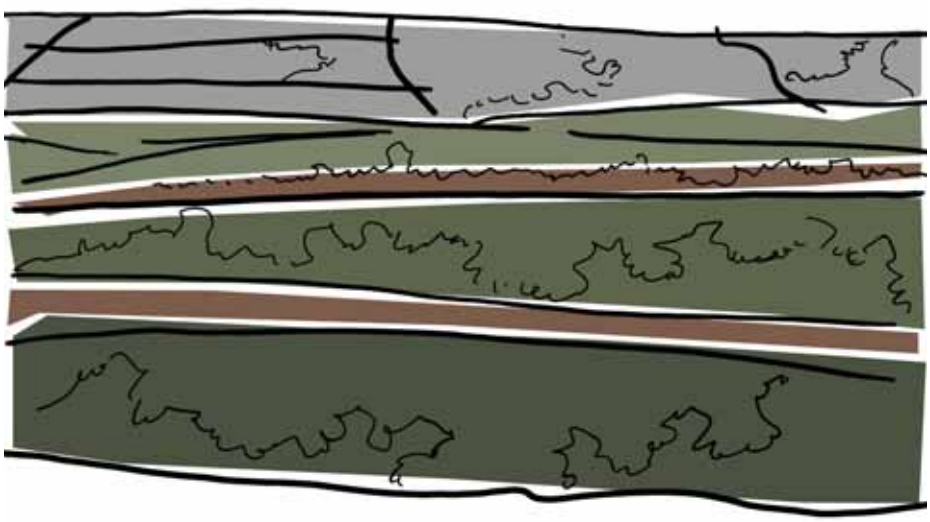
Pastures mainly cover the area, and smaller area of arable surfaces is located in the lower parts: valleys and sinkholes. Larger terraced surfaces on the surrounding slopes are mostly abandoned nowadays. Prolonged cattle grazing left its trail on rocky pastures, in a form of specific grass vegetation comprised of herbs and low semi-bushes; specific vegetation habitat of meadow fescue and crested hair grass (large areas in continuation north of Belej have been suggested as botanical reservation). Deserted pastures are covered with macchia and predominant juniper (*Juniperus oxycedrus L.)*. Some pastoral surfaces are covered with mixed forest complexes. Habitats of black pine are located along the northern main road. Pastoral surfaces are characterized by diversity of dry wall parcellation; predominant large square parcels occupy more exposed and flat surfaces, while various patterns of fragmented parcels define lower parts and valleys (this can also be applied to differentiation of communal and private pastures). Sinkholes, in a form of round karst depressions, fenced by stone dry walls or hedges are mainly abandoned nowadays. They are densely and uniformly scattered throughout area and make one of its most recognizable elements.

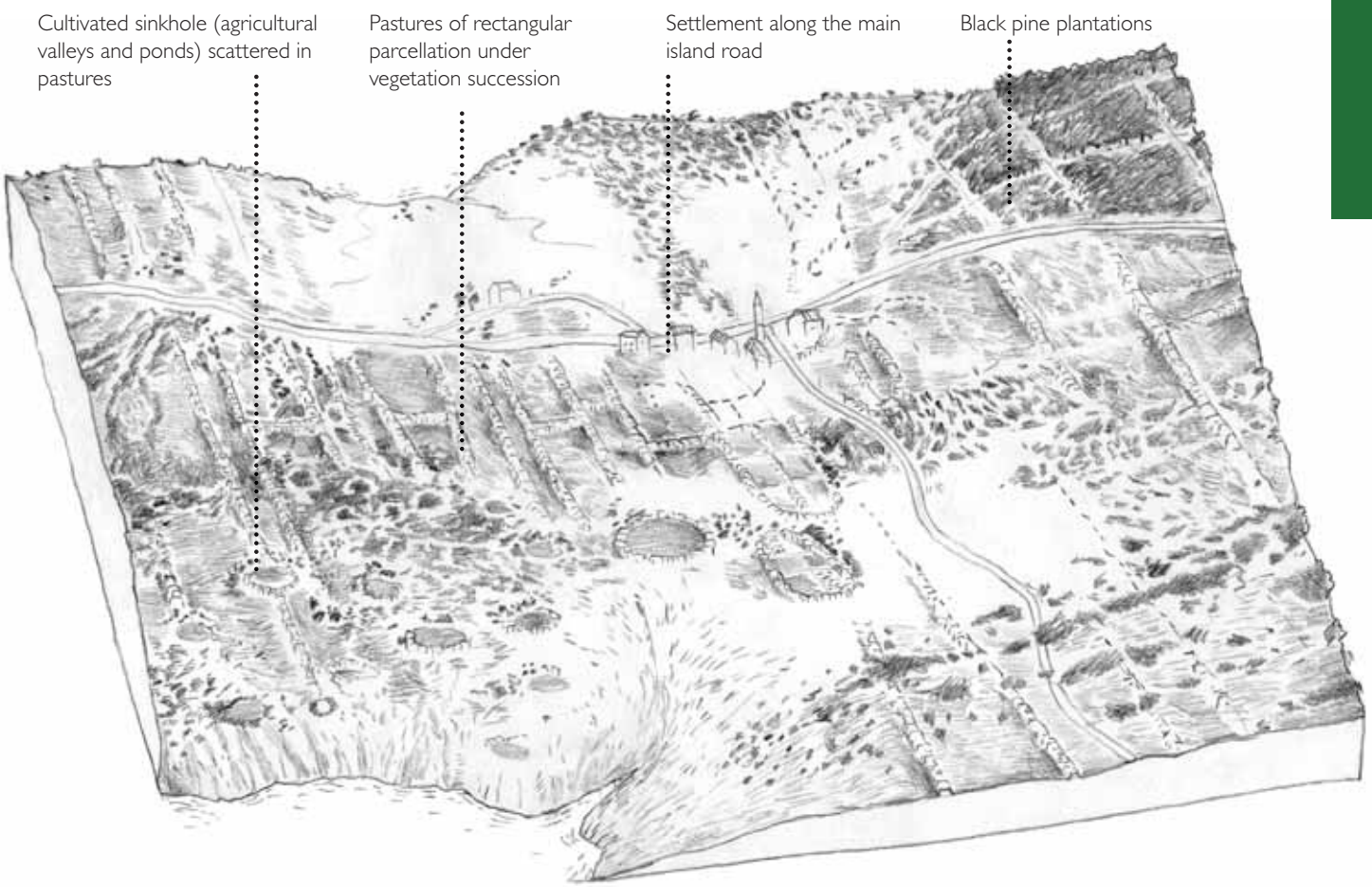
Settlements and roads

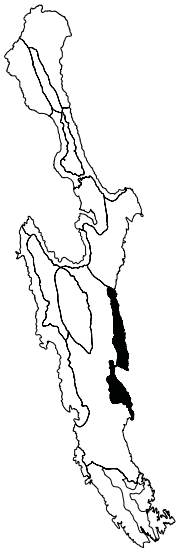
All the settlements have compact structure, and together with adjacent fertile valleys and sinkholes enclose rural complexes, surrounded by pastures. They are Belej, Orlec, Vrana, Hrasta and a small village Kačićevi. Villages Belej and Hrasta are genetically interesting because they have developed from one or more shepherds' dwellings. It is revealed in a scattered matrix of preserved traditional stone architecture within the village of Belej. This preservation is the result of abandonment while several buildings have been transformed into hospitality facilities, renovated with contemporary materials and colours. Preserved autochthone architecture with sporadic renovation with contemporary materials is a characteristic for all the villages in the area. Its central part, the main meeting point, is defined by St. George's church and St. Roko's church. The fact that the main road passes through, makes this village as unavoidable as it is a transit zone. Orlec is the biggest inland settlement with its hundred inhabitants and it is a protected ethnological-rural complex. It is located on a mild slope, with numerous contemporary and traditional access roads. A road fenced by a dry wall for its most part goes along the southwestern border of the area. Other macadam roads usually have east-west direction, and connect eastern coastal areas with the main road. Shepherds' dwelling Loze is located within southern inland area.

Scenery

The most prominent element of the landscape, its rocky pastures fenced by stone dry walls, are visible and comprehensible within the space due to scaly terrain and the fact that they are still used. They are represented by a complex sequence of plans, enhanced by contrasts of red, yellow and green vegetation during seasonal transitions. Additionally, dry wall as a dominant spatial element, that has created this scenery, is also the core of its balance. Round cultivated sinkholes (gardens, forests and puddles) are very important features and gravity points of the landscape. Several elevated hummocks with dwellings and churches also dominate the scenery. The whole area is anthropogenic, but its character is changing due to increased overgrowing. As opposed to clear pastures, forested areas are characterised by enclosed incomprehensible complexes with short views. Shepherds' paths intertwine the whole area.




Cultivated sinkhole (agricultural valleys and ponds) scattered in pastures
Pastures of rectangular parcellation under vegetation succession
Settlement along the main island road
Black pine plantations



4.5.2. Barren pastures of the eastern coastal side

Narrow coast of the central plateau is characterised by its bare rocks and balanced parcellation of managed pastures. It comprises area from Mali bok bay to Punta Sv. Duh cape and Konfin bay area, southeast of Belej.

Relief

The area is defined by both mildly laid coasts and bare steep coasts dissected by numerous torrents. Sporadic erosive torrential flows create numerous gravel beaches; Mali bok, Slivna, Jelovica and Lukovac. Cliffs end with cape Sv. Duh and the terrain is here divided by a valley that extends towards the sea. Because it is sheltered from bora and subject to soil deposition, the valley is covered by high vegetation. In contrast, the harshest part of the entire island is in this area and it is represented by bare rocks exposed to "Senj bora".

Vegetation cover and land use

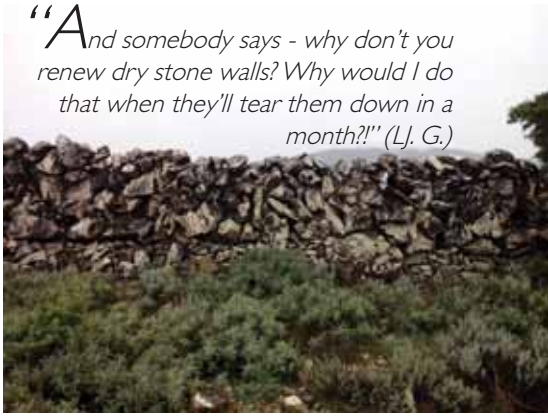
The area is predominantly defined by managed pastures that are characterised by large strips of regular parcels along the eastern slope. Besides their elongation and height (shelter against bora), dry walls are specific because they don't have wooden latticed gates *(lese)*. Access from one parcel to another is enabled by openings next to the ground for sheep, while shepherds use pointed horizontal rocks as a steps. This area is also characterized by scattered dry wall sinkholes (Konfin area), but they are not as numerous as on other pastures. Several sinkholes have been turned into puddles and it determined location of the surrounding pastures in order to enable equal access to water from all the bordering parcels. Karst areas with some vegetation developed a cover of Mediterranean macchia. Several juniper bushes (*Juniperus oxycedrus L.*) are scattered along barren pastures.

Shepherds' architectural heritage and connections

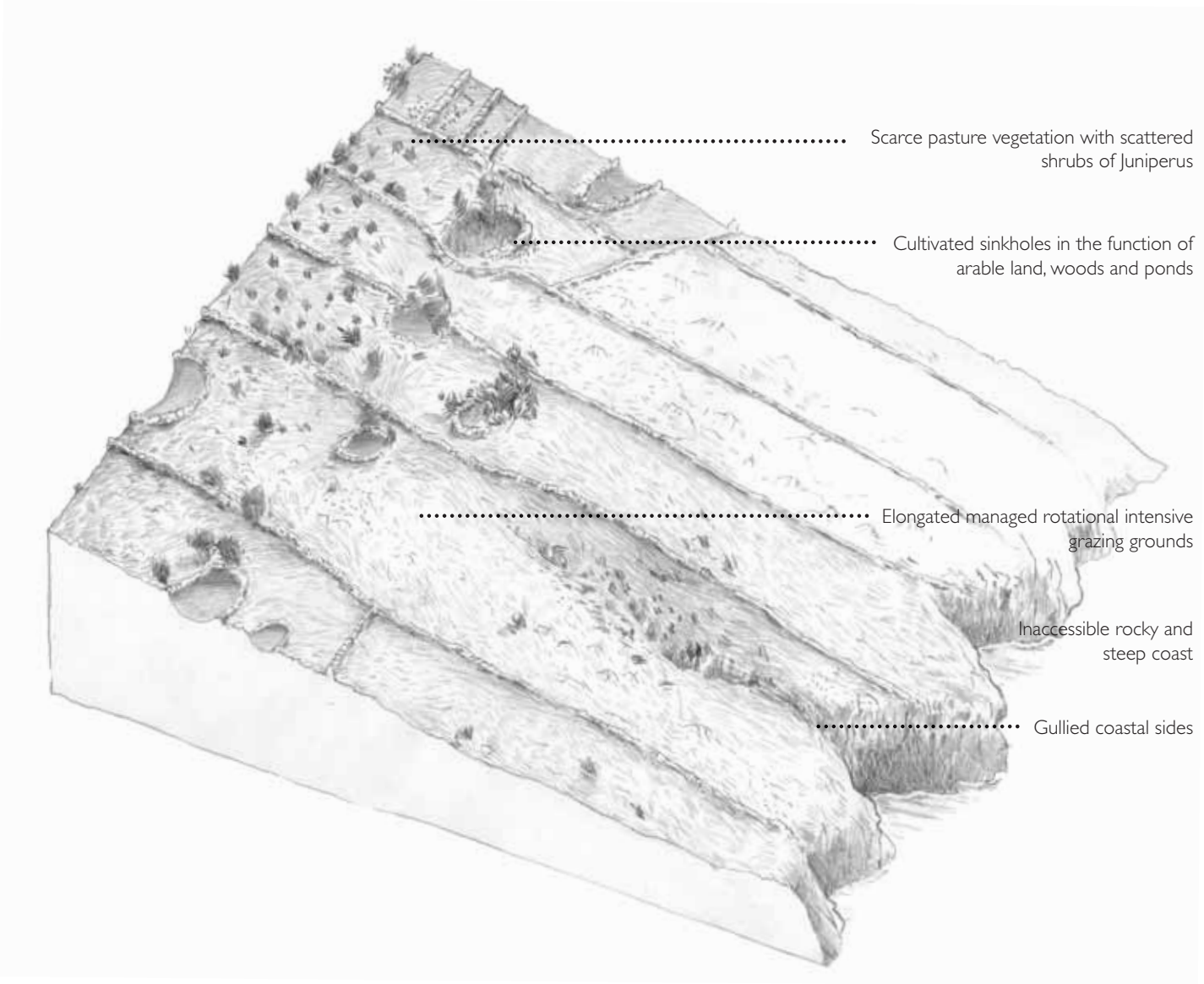
Access to distant eastern coasts is not facilitated by bigger roads - connection to the central part of the island is enabled only by a winding macadam road with direct access to the main road, and the coast can be reached by asphalt road (built on a torrent), connecting Orlec to Mali bok bay. Given the fact that desolate and steep rocks are home to the Eurasian griffon, east coast is under special protection category: ornithology reservation Mali bok - Koromačno. There are no settlements, only two abandoned chapels, located on the slopes, used as sheep shelters. "Communal puddle" is located at the base of St. George's chapel.

Scenery

The first impression of the area is defined by its radical and inhospitable natural conditions, revealed by a steep coast and lack of vegetation, but at the same time, by adaptability and incorporated anthropogenic influence (animal husbandry) within harsh landscape. Recognizable image of bare white stone and scattered bushes of grey and green juniper (*Juniperus oxycedrus L.*) dominate the scenery. The whole area is open and clear, characterised by numerous panoramic vistas of surrounding stone dry walls, pastures and the sea. Stretches of regular stone dry walls dominate the landscape, evoking uniformity, as well as inspiration and tranquillity. Puddles, deserted chapels and singular low trees deformed by wind gusts (mainly used as sun shelters for sheep,) give this monotonous scenery a distinguished feature.



"And somebody says - why don't you renew dry stone walls? Why would I do that when they'll tear them down in a month?!" (LJ. G.)


Scarce pasture vegetation with scattered shrubs of Juniperus
Cultivated sinkholes in the function of arable land, woods and ponds
Elongated managed rotational intensive grazing grounds
Inaccessible rocky and steep coast
Gullied coastal sides

4.6. LANDSCAPE UNITS OF OSOR AND PUNTA KRIŽA

LANDSCAPE AREAS:

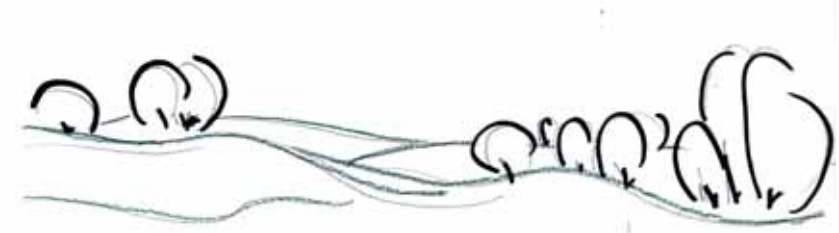
Forested and indented coastal sides of Punta Križa

Central valley of Punta Križa

Osor and the shallow bay

"We, the locals, have never felt that this space is Cres, or that it's Lošinj. It's all the same to me. But administratively, in this set of circumstances we belong to Lošinj. And geographically we are in Cres. And no one here will tell you they are from Cres. Because they never went to Cres. They went to Lošinj. (LJ. G.)

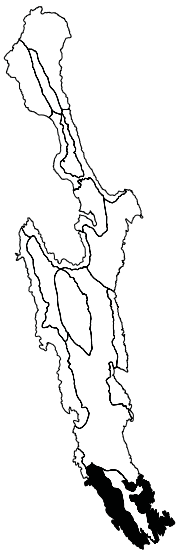
"Each millimetre of land was dug. We couldn't grow wheat, but we grew barley and corn on the best land. Olives were around the land that was suitable for digging. People couldn't have big pastures and herds because it's forest. And Punta Križa lived: we'd cut forest for 6 months, and for 6 months we'd transport wood. To feed the family you'd have 25 sheep. Corn for home, vegetables for home. We'd live from selling wood, and maybe some lamb." (Lj. G.)



Cross-section of the landscape unit of Osor and Punta Križa

IMPRESSIONS AND VISUAL EXPERIENCE

- Forested and enclosed area, with narrow paths leading towards traditional shepherds' dwellings
- Long panoramic vistas of the plateau and indented bay revealed from the guardhouse
- Low shore, marshlands, shallow wetlands and sea encompassed by the bay
- Micro-locations of intensive agricultural crops
- Old town core of Osor with high tower located at the characteristic connection of two islands
- Stone dry wall fences enclosing agricultural lots on wetland surfaces



4.6.1. Forested and indented coastal sides of Punta Križa

Punta Križa is defined by its eastern and western coastal zones. Almost fractal dimensions of its indented coastline are revealed by numerous cut in bays, and the entire continental zone is covered with thick forests of downy oak, which is unique in comparison to the whole island area.

Relief

This area covers the ultimate part of the low plateau within the landscape unit of Osor and Punta Križa, built of limestone and dolomite with numerous smaller karst depressions (sinkholes). It is characterised by rather balanced terrain with mild slopes (the entire area is below 100 masl) and the highest peak (Bernardin) is only 103 m above sea level. Elevations form gentle parallel crests along the tectonic structure of the island in NW-SE direction, with shallow valleys with submerged rims between them.

Vegetation cover and land use

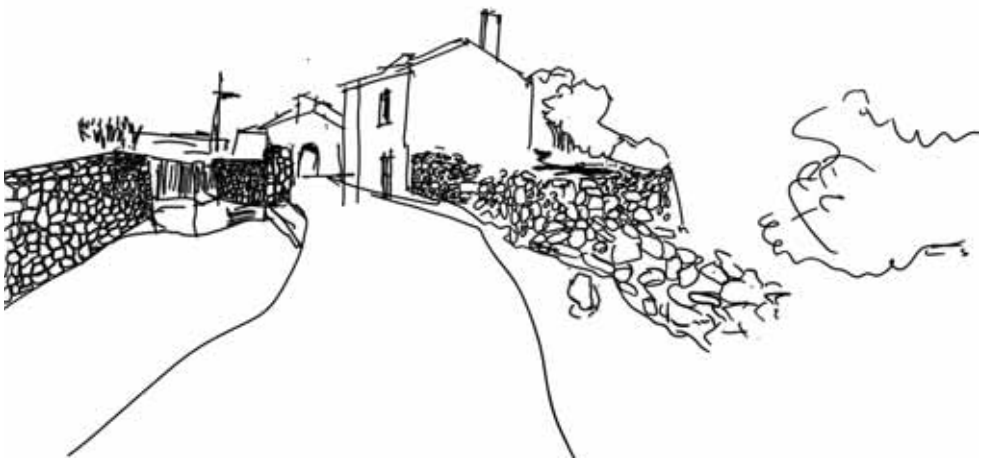
Natural vegetation cover is preserved in the areas of organized forest exploitation. It is defined by Mediterranean vegetation of holm oak and macchia, followed by their subassociations, facieses and degradation stages. The easternmost part is predominantly covered with thick forest of holm oak descending almost to the shore, smaller open habitats of aromatic plants and complexes of downy oak within karst depressions. Due to valuable and preserved Mediterranean vegetation habitats, the area has been suggested for protection as a special reservation of forest vegetation with local significance (holm oak, strawberry trees, juniper, myrtle, bay leaves, milkweed, terebinth and mastic). Valleys comprise shallow complexes of flat land filled with red soil. South part of the plateau is mainly covered with forest. West coastal plains are characterised by arable land, mainly olive groves and vineyards. Traditional pastures and olive groves are defined by succession or overgrowing with macchia and forest.

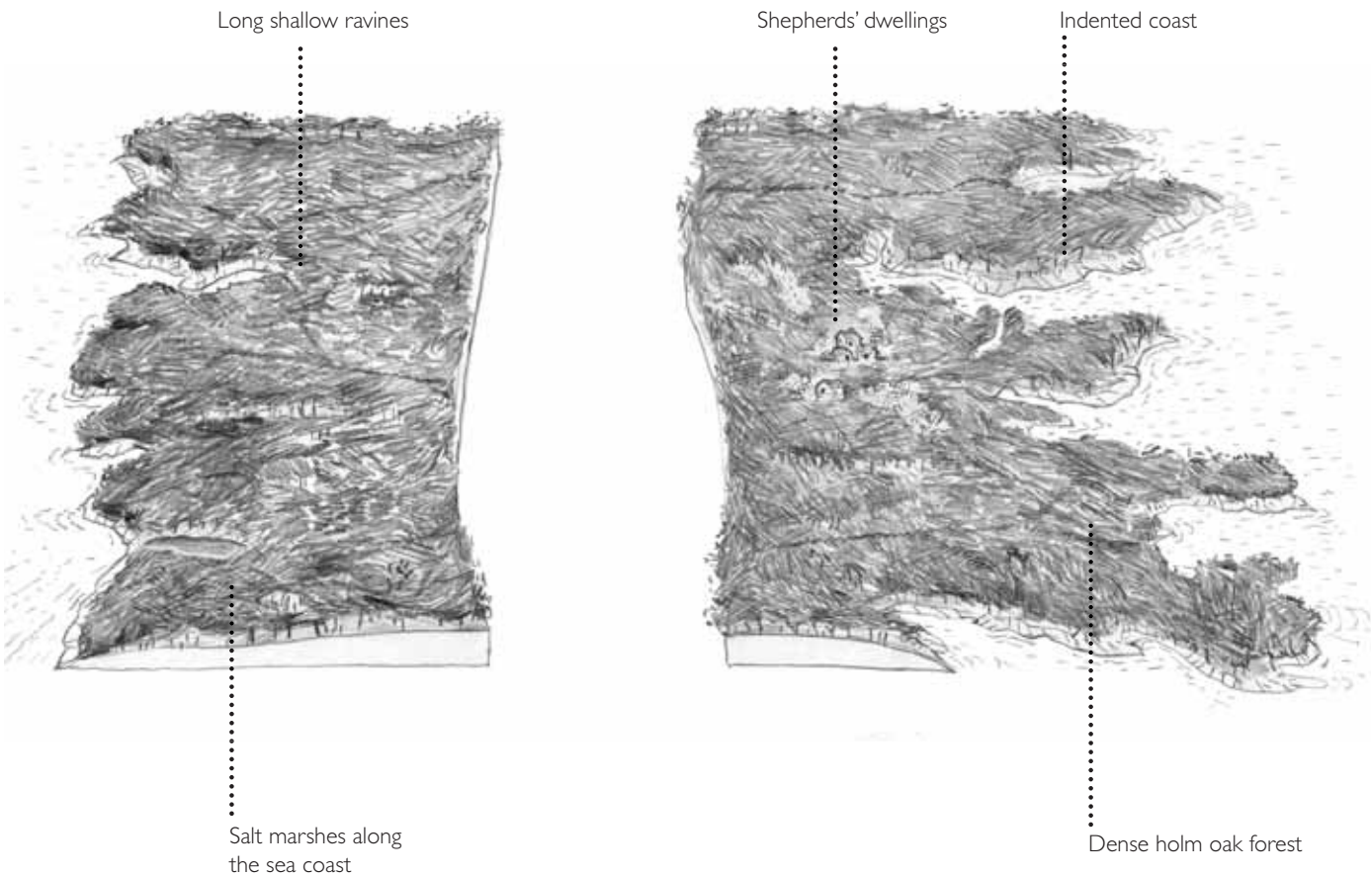
Settlements and paths

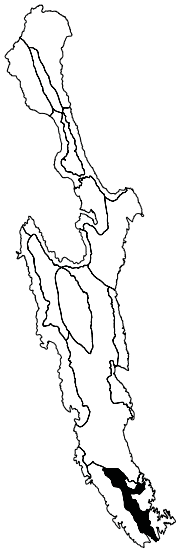
There are no settlements within the area, but only small rural complexes (abandoned rural settlements and shepherds' dwellings), located in the vicinity of several valleys (bays) and these are: Drakovac, Murtovnik, Sv. Anton, Parhavac, Smrečje, Lusare and Peski. Shepherds' dwellings are surrounded by big or small clearings that were traditionally cultivated, but now are subject to natural succession. Pastures were located further from the dwellings. The prominent south part of the island is subject to stronger maritime influences, while southeast and southwest shores are inaccessible because of weak traffic connections, and can only be reached through the forest or the sea. Shepherds' dwelling in V. Mikložan, located near the sea, represents a relatively well-preserved rural complex defined by clear typology of the objects in the function of autarkic microeconomic structure. Renovated limekiln and threshing floor are next to the hut.

Scenery

The landscape is characterized by low indented coast surrounded by forest belt, but its uniqueness derives from thick and deep forest covering the whole low plateau. Narrow winding paths with numerous extensions lead to specific locations of traditional shepherds' dwellings within aromatic and rich forest. Vicinity of the coast reveals sea views.




Long shallow ravines
Shepherds' dwellings
Indented coast
Salt marshes along
the sea coast
Dense holm oak forest



4.6.2. The central valley of Punta Križa

This landscape area covers longitudinal central part of the plateau Punta Križa and extends to Jadrišćica bay. Compared to surrounding forests on its eastern and western shores, anthropogenic influence is more visible in this area. The area comprises numerous new economic initiatives around the village Punta Križa and the surrounding mosaic of shepherds' dwellings, forests, pastures and cultivated surfaces along the main road.

Relief

This landscape area belongs to a wider relief context of the south part of the island - low karst plateaus (below 100 masl) dissected by numerous torrents and indented by sinkholes. It is located in its central valley. North part is higher, with the highest peak Vela Straža (154 masl) and from that point the terrain gently descends towards indented low coast. It is enclosed by mild parallel crests and extends into the submerged coast on the south.

Vegetation cover and land use

Active agricultural surfaces dominate the area. The terrain is characterised by pastures fenced by dry walls and arable lots. This area is specific for the new technique of enclosing pastures; besides traditional dry walls, metal fences are used in attempt to fight allochtone wild species. Unlike the central part of the island, the pastures here are small and enclosed, surrounded by thick forest of young holm oak and gradually overgrown by macchia. Dry walls are lower in comparison to the rest of the island. In the south, in Jadrišćica bay, visible remains of terraced slopes, traditionally used as vineyards, dominate the area. There are tendencies of agricultural revitalisation and regrowth of cultures like olives, vine, vegetables and aromatic and medicinal plants.

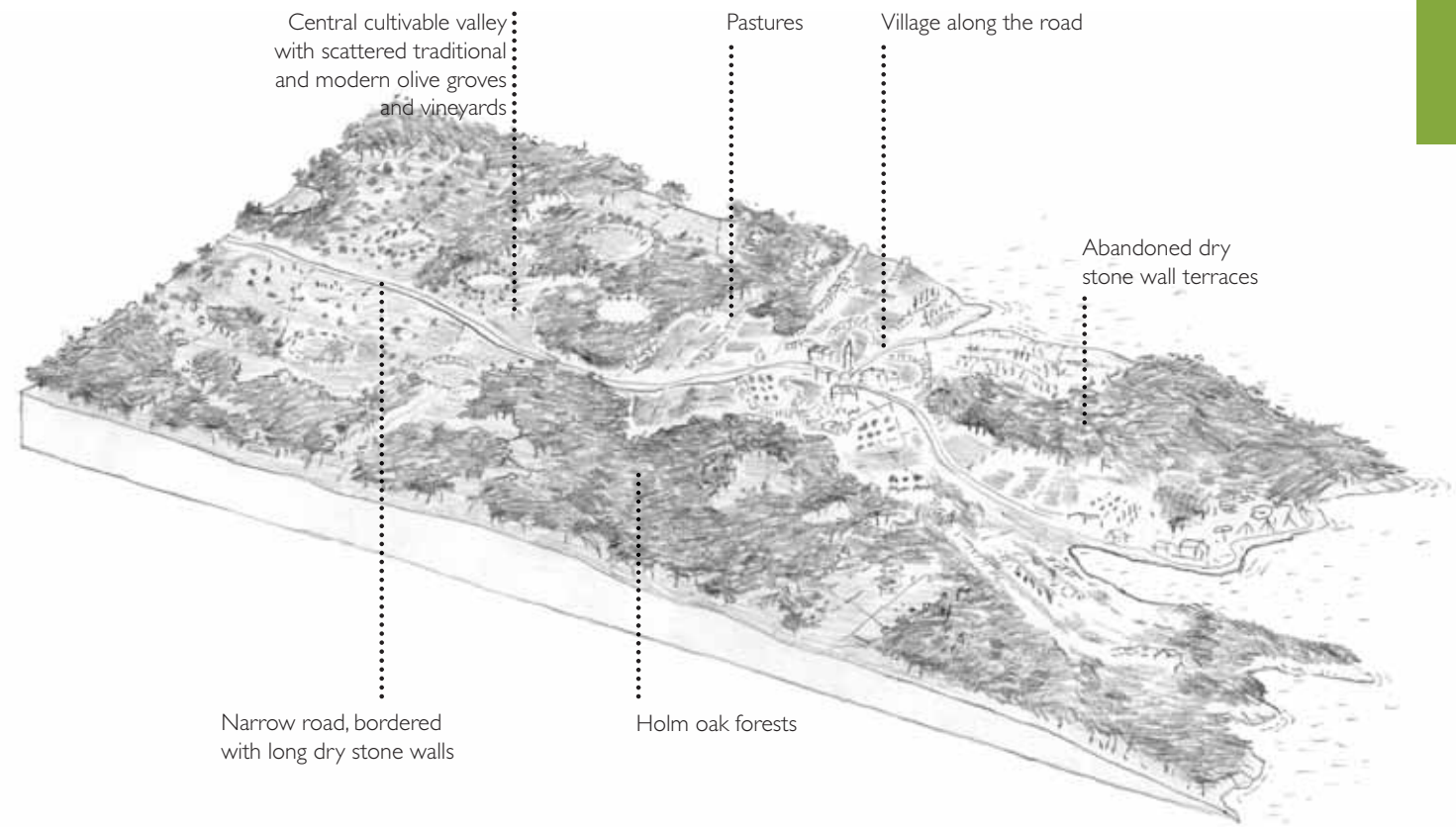
Village Punta Križa and recent construction elements

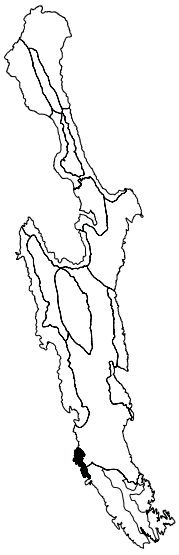
The plateau is divided into two parts by the central road of local significance that connects this area with the northern part of the island. The road is narrow with average width of 4 m. It is surrounded by dry walls "*unjulice*" and extremely dense forest and macchia, scattered with new olive groves. Village Punta Križa is located in one of the valleys near Ul bay and comprises around thirty houses and churches. Its scattered matrix is a result of a numerous big gardens that surround each house and that way enclose the complex of the village. Punta Križa is primarily oriented towards tourism, which is evident in its predominantly new architecture (apartments), and conversion of old villages (Draga, Pogana and Bokinić) into weekend settlements, its big camping site and the marina, all of which decrease its traditional value.

The area is characterised by shepherds' dwellings that incorporate new contents. They have recently been renovated and adjusted for agro-touristic or hospitality purposes. The most prominent example is Donji Grmožaj.

Scenery

This area is defined by both open and enclosed ambiance; small active agricultural areas are contrasted to vast impassable forests of holm oak. The winding main road reveals short views of thin stone dry wall fences and thick, but low holm oak forest. Macadam extensions of the main road lead to nearby shepherds' dwellings, prehistoric site Jama and the highest peak of the southern part of the island, Vela Straža, that reveals panoramic vistas of the plateau and indented coast, together with the neighbouring island Lošinj.


Central cultivable valley with scattered traditional and modern olive groves and vineyards
Pastures
Village along the road
Abandoned dry stone wall terraces
Narrow road, bordered with long dry stone walls
Holm oak forests



4.6.3. Osor and the shallow bay

Salt marshes and mildly indented coastal zone, a bridge over the narrow channel, a camping site below forest in the northern hinterland, together with historical urban complex of former main centre, Osor, bear witness to historical identity of this area but also define its contemporary processes.

Relief

Low elongated, almost inconspicuous slopes descending towards the south and ending in indented coasts characterize the area. Rocky beaches and wetlands surround the whole area (Jazić bay, Podbrajde bay, Sonta bay, Bijar bay etc.). Wide sinkholes towards Punta Križa have taken the form of postglacial salt marshes - small shallow lakes containing brackish water and covering the surface of 3, 4 to 0,03 ha. They are divided from the sea by several meters high limestone crest. Salt marshes define the central part of a wide zone of alluvial (carbonate) soils, or wetlands. This area has been proposed for protection as a special botanic and zoological reservation.

Vegetation cover and land use

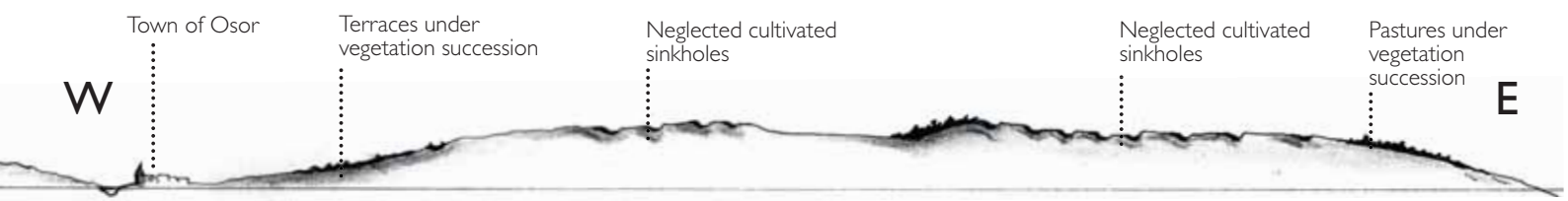
This specific terrain is characterised by low relief combined with wetlands and hydrogenic soils, which is reflected upon its land use and organization. Agricultural orientation defines the area around Osor, and terrains that are more distant are characterized by succession of Mediterranean vegetation that extends into holm oak forest in Punta Križa. The pattern of parcellation (visible on old aerial photographs) is extremely complex, defined by interchange of regular and irregular parcels, with mainly massive walls and distinguished inner heaps. This structure was primarily subject to salt marshes, which is evident in communal paths used for accessing puddles. Wetland vegetation gives this landscape its unique character, due to rare appearance of these habitats on karst islands. Northwest of Osor, Bijar bay is specific for its alpine pine plantations.

Urban complex of historical Osor

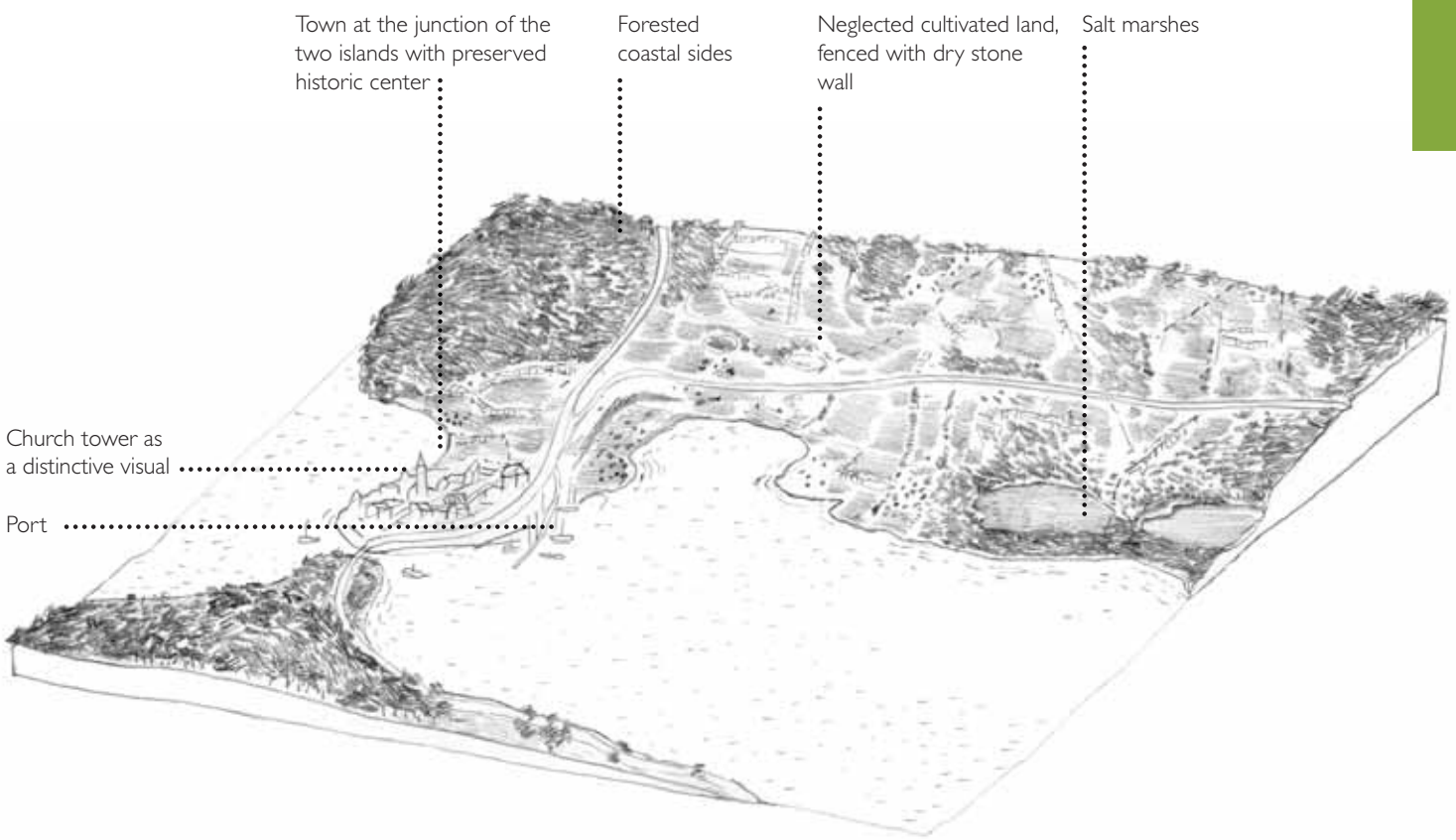
Osor is the oldest coastal settlement on the island of Cres. It is situated on the narrow channel, (former isthmus) connecting two islands and two seas. Due to this strategically important location, it was perceived as the main centre of the whole Cres - Lošinj archipelago. Its historical prosperity is still visible within its walls: the historic core is almost completely preserved with visible remains of the forum, the town hall, the bishop's palace and the cathedral with the tower, the most prominent element in the area. Nevertheless, Osor has turned to agriculture, evident in its surroundings, and lately towards tourism, represented by the camping site Bijar, houses converted into apartments and a little port. The main road, passing along the southern border of the village, connects the two islands.

Scenery

Specific ambiance and visual aspects of the area are characterized by its unique natural surroundings, represented by low shore, marshlands, shallow wetlands and the sea encompassed by the bay. The prevailing tone defines the area as a remote, abandoned and tranquil unit. The space is dominated by the structure of the historic core of Osor, itself defined by the high tower. The main road towards south opens views of Osor. Stone town streets, renovated houses and sacral buildings, embellished by flower gardens, and small squares enhance the pleasant historical character. The area outside the town core is natural and spacious. Vistas of the hilly northern part of the island Lošinj and two sea bays are revealed along the eastern coast. Spatial dynamics is realized through interesting micro-localities: forested Bijar bay and agricultural lot fenced by dry stone walls on wetland surfaces.



Cross-section of the landscape area of Osor and the shallow bay


Town at the junction of the two islands with preserved historic center
Forested coastal sides
Neglected cultivated land, fenced with dry stone wall
Salt marshes
Church tower as a distinctive visual
Port

5. GUIDELINES FOR MANAGING LANDSCAPES OF THE ISLAND OF CRES

5.1. Final analysis of the condition and value of Cres landscapes

This landscape study provides an overview of characteristics, conditions and values of individual landscape areas of the island of Cres. A special attention was given to perceptions and preferences of the local community, visitors and landscape experts, with focus on disadvantages and advantages of the present management of those landscapes. These insights were considered while creating the final guidelines. It should be pointed out that extremely complex landscape structure of the island of Cres is the result of diversity in land use, terrain organization and vegetation cover, conditioned by its specific relief and traditional land use. Some areas have highly distinctive characteristics, due to this island's exceptionality beyond local level. Supported by the fact that it is situated near the mainland, bearing in mind how fast it can be reached, we become aware that island's numerous comparative advantages still haven't been adequately used or recognized. To clarify the problem of "unrecognition", the starting point should be the analysis of perception of the island. It was determined that public promotion of Cres included only a small part of its landscape, focusing on its representative elements, revealed in the narrow "touristic perception". On the other hand, even the local community doesn't have a clear perspective on diversity and specificity of the island landscape. It is partially a consequence of the fact that the concept of landscape hasn't been adequately incorporated in policies related to landscape planning and protection of cultural and natural heritage, themselves characterized as partial and focused on objects, localities, phenomena etc. For older generations the use of landscape as a place of identification implied specific small areas with qualitative territorial significance, while for younger generations it is mainly extensive and qualitative. Contemporary possibilities and movement dynamics seemingly contribute to perception of singularity and diversity of island landscape, but simultaneously use its "spaciousness" only as a transition line from one point with centralised life activities to another, which deprives the landscape of its significance and visibility. All these insights imply necessary change in the local community - landscape relation. Analysis of the landscape condition showed that the larger part of the territory is exposed to extreme dynamics and changes caused by abandonment of agricultural lands and rural settlements. Although this is a common fact, it is additionally stressed in this study, focusing on areas that are mostly affected in this respect, or opposite, those that are more active and still manage to retain its traditional features (map 2). The abandonment is followed by problems of centralization of inhabitants and activities in the main town centre of the island. The main road primarily connects, but also enhances isolation of the major part of the island turning it into a "transit zone". This isolation, on the other hand, helped preservation of settlement structures and architecture that weren't subject to modernization.

5.2. Thematic framework for defining guidelines for managing landscapes

Traditional cultural landscape

Landscape of the island of Cres is mainly determined by traditional agricultural activities in different stages: active, recently neglected and completely abandoned. Pastoral landscape dominates the area.

Pastoral landscapes – Different types of pasture use include managed, communal and forest pastures. Managed pasture (managed rotational intensive grazing grounds) implies private fenced pastures following different patterns of mainly spacious square parcellation structures. Dry wall fences enable control of movement - rotation of the cattle. Communal pasture (*komunada*), as a functional extension of private pasture, is related to traditionally regulated relations of using common surfaces, but there is still not enough information about that. Several communal pastures are still active, evident in their bare ground; some are abandoned and unnoticeable, while others were turned into pine forests during afforestation. Abandonment of animal husbandry, i.e. its extension, creates the so-called forest pasture - higher vegetation entirely encloses the pasture and takes precedence over low pastoral vegetation. That process implies additional problems with juniper succession (*Juniperus oxycedrus L.)*, which is not only invasive, but also difficult to eradicate. Value of pastoral landscape should be viewed through inseparability of its cultural and agricultural qualities. Presentational impact of the still existing traditional culture of cattle breeding is spatially evident in its complexity and intensity of dry wall structures and adjacent traditional facilities, but also in traditional practice of cattle rotation, as well as in sharing of communal pastures. Pastures imply the value of agro-biodiversity, visible in natural species and systems that have evolved with livestock activities: vegetation of rocky pastures, micro ecosystems of cultivated puddles and Eurasian griffon communities. We arrive at a conclusion that pastoral landscapes are amongst the fundamental cultural, natural and aesthetic values of the island of Cres, and exceptionality thereof places this landscape within national, even international context. That is why a special focus should be given to preservation and improvement of pastoral landscapes. Representative areas are (map 2):

- Area if inland pastures (Vrana, Belej, Stivan, Ustrine and Osor), representing a complex of private and communal pastures (Belej, Ustrine, Stivan and Osor pastures are lined up in space, making one complex) and some smaller singular pasture surfaces;
- Coastal barren pastures in a stretch from bay Dubovica to bay Koromačno.

Landscape of olive groves – Olive groves around the town of Cres are the next most specific element of the island's landscape (map 2). They represent one of the largest homogenous zones of traditional olive groves in the Adriatic area, and singularity thereof is evident in their unity with the urban matrix. This spacious locality is preserved due to its specific agro-pastoral use, as grazing grounds. These are the reasons why productive, authentic and aesthetic potential of these olive groves is significant and therefore should be subject to systematic management and presentation.

Landscape of rural complexes – Landscape of rural complexes comprises buildings in the settlements and the surrounding agricultural surfaces that traditionally represented one singular organism. Typical rural complex was usually represented by a settlement perched above a valley or a sinkhole, used as a fertile surface suitable for growing more demanding cultures (vegetable groves, orchards, grains). Abandonment of agricultural surfaces around settlements leads to disintegration of almost all rural complexes on Cres, with buildings within the settlements as the

remnants of that organism (map 3). Unlike the surrounding agricultural surfaces, settlements (buildings) mainly preserve their historic character. Visible interventions (additional construction and apartmanization) don't interfere with the ambience and harmony of the surrounding area, like in some other Adriatic islands. Among thirty island settlements, only Cres and Martinščica are characterized by significant expansion in relation to the historical core, while weekend houses predominate historical matrix in Zaglav, Merag and Porozina. Revitalisation of rural complexes should be the starting point of all discussions on the future of the island landscape and should therefore be prioritised. Distinguished valuable rural complexes are (map 2):

- The peninsular zone of Gerbin area comprising settlements Lubenice, Pernat, Podol and Grmov with adjoining, predominantly neglected agricultural units;
- Predošćica and its cultivated fertile valley and surrounding pastures;
- Filozići and Dragozetići with forested and autochthone landscape of neglected agriculture.

Landscape of relict dry walls – Spacious Cres surfaces are defined by intensive fragmentation patterns of stone dry wall parcels (*barbakan*) that are incomprehensible within the space or are covered by forests. It is assumed that these systems, as in other Adriatic areas, suddenly "emerged" during the short period of karst bonification in the 19th century, and their abandonment was just as sudden. Intensity of these dry wall structures can be interesting and valuable for presentation, but it also has significant revitalization potential. This revitalization doesn't necessarily have to continue traditional practices - the existing structure can be the base for merging of parcels and intensifying of agriculture. Significant surfaces of this type can be found in:

- Spacious hinterland of the town of Cres, extending towards east coast;
- South of Lake Vrana.

Natural landscape

As opposed to its agricultural aspects, it is necessary to consider natural landscape of the island, as well. Finally, naturalness is an impression that dominates the island, and is defined by its dynamic relief, thick vegetation cover and specific land use:

- Dominant relief formations do not just restrict access to some island areas, but also fascinate by their appearance and evoke a sense of force of natural processes;
- Thick vegetation cover is a consequence of natural succession, but also of specific climate, silvo-pastoral management of the forests and systematic afforestation;
- Land use traditionally implied only local resources and materials and is incorporated into natural image of the island.

Natural allure of Cres creates a situation of double consequences. On one hand, it evokes particular ambiance (forests, inaccessible beaches, absence of coastal apartmanization, tranquillity, isolation), and on the other hand, attempts of agricultural revitalisation are even more challenging. Lack of incentives is not just a result of inaccessibility of the area, but also a consequence of allochthone wild species that thrive in natural surroundings. Therefore, natural landscape potential should be developed in several directions, but autochthone naturalness should be potentiated in areas where it directly or indirectly represents opportunities and comparative advantages of the island (Below mentioned forest and coastal landscapes).

Forest landscape – Tall thick forest complexes create ambiance atypical for other Adriatic islands because they create "continental" impressions. The most prominent forest localities are Tramuntana and Punta Križa. They are characterised by exceptional biodiversity and cultural heritage (a testimony of traditional forest management). A sense of naturalness and its extraordinary ambiance is a potential already recognized in forests of Tramuntana, in a form of new activities. As a special category, forests of black pine, from the times of systematic afforestation (in several occurrences, from French administration to times following WW II), were planted in communal pastures with a purpose of protection of land or as a shelter from wind. Today, these forests represent dominating monoculture complexes of tall trees, clearly delineated in contrast to surrounding vegetation. They are numerous in a stretch from west coast and Gerbin peak area, and around Vodice, Helm peak and north of Lake Vrana. The most important forest landscapes:

- Tramuntana;
- Punta Križa;
- Black pine habitats around Martinšćica, Osor, Lubenice and Helm, and along the road near Vrana

Landscape of coastlines and beaches – Cres is characterised by extremely long and diversified coastline (from low and indented to tall steep cliffs) with relatively small number of beaches. Apart from some filled zones in Cres bay, all the beaches are preserved and represent results of natural processes. Beaches are mainly hidden and distant from settlements, which contributes not only the ambiance, but also the paths leading towards them. Inaccessibility and preservation of beaches is what makes Cres recognizable, which should be the starting point for further considerations on their preservation and use. They still haven't been systematically inventoried.

New purposes within space

Tendencies of agricultural revitalisation (olive groves and vineyards) in Punta Križa include intensive agriculture (karst ploughing, merging of fragmented lots, etc.). These are, unquestionably, positive initiatives, but their impact on attractiveness and recognisability of the landscape is questionable, and these and similar trends should therefore be considered in a synergy of farmers and responsible bodies. Furthermore, several fertile sinkholes in central pastures indicate trends of intensification of vegetable growing, and, from the point of view of inclusion within the ambiance, these can be described as positive, since they follow the logic of sinkhole morphology. Tramunatana is characterized by alternative activities, like spiritual and artistic programs, eco-educational workshops and recreational races. These tendencies are spatially non invasive, but nevertheless get the desirable attention of visitors in search of recreational, sports, authentic or unconventional contents.

RECAPITULATION OF THE PROBLEMS IDENTIFIED

- Prevailing centralization and traffic isolation, i.e. the existing traffic connections define the island as a "bridge" and "transit zone".
- Abandonment of inland settlements - deterioration of valuable examples of residential and sacral island architecture, the loss of integrity

of rural complexes.

- Abandonment of agriculture and predominance of succession - the loss of recognizable spatial and cultural identity.
- Fragmentation and parcellation of the terrain and unclear land ownership.
- A lack of integral knowledge of characteristics and values of the island; insufficient representation of landscape concept as a potential economic and touristic resource.
- Negative trends in manner and level of identification of local community with space - utilitarian landscape as a place of identification that transcends from qualitative and territorial into quantitative and extensive value, which increases its marginalization.
- Absence of space inventories in all segments.
- The potential of authentic traditional identity is poorly reflected upon touristic offer; predominantly quick solutions do not have a long-term impact on touristic specificity of the island.
- Presence of two allochthone invasive species has a negative impact upon agriculture, cultivation, maintenance and use of the landscape.
- Generational change - inertness and passivity of younger generation is reflected upon abandonment of cultivated areas and non-recognition of the potential of new initiatives and revitalization of landscape management.

5.3. Measures for landscape management on the island of Cres

General measures for landscape management

Diversity and specificity of its landscape areas are the fundamental potential and resource of the island of Cres, and all reflections on use, management and presentation of the island should be based on this premise. Incorporating the concept of landscape into island's offer and management policy means to widen the focus from singular localities and phenomena to space as a whole - the landscape.

1. Recognized landscape areas should be perceived as a framework of landscape insights for the local community and a potential for identification in terms of managing spatial units.

2. In that aspect, it is crucial to enable public insight into results of this study in a printed form, and by innovative Internet and multimedia tools. Given the fact that the whole study is GIS supported, it is necessary to consider the possibility of implementing publically available GIS interface, that will serve as a platform for search of results, as well as complement the existing data (participation of all stakeholders in data collection, e.g. interface Suhozid.hr). These tools can be especially useful for the managing bodies in monitoring, implementing studies of landscape impact, laying out spatial plans, conservation surfaces, etc. Applicability of such interface for more detailed research should be assessed, especially within the domain of classification of areas: local traditional practices, traditional land use, traditional architecture and stone dry walls, village and settlement characterization, puddles, vegetation habitats, etc. Catalogues and inventories can be extremely useful starting points for project application. In that sense, it is necessary to define priority research areas (e.g. Tramuntana, inland and coastal pastures, etc.)

3. To intensify higher level of landscape protection where recognisability is at the highest level and where it represents Cres the best. A concept of exceptional landscape is suggested for this purpose (map 4), but it should primarily be promoted within local community with the aim of intensifying identification of owners with them. Preservation of exceptional landscapes should not be considered in terms of ignoring all other landscapes; quite the contrary - careful management of exceptional landscapes should serve as exemplary model for managing other landscapes.

4. To encourage activation of remote areas (with focus on rural areas, but also areas outside inhabited areas that due to their ambience have presentational potential, e.g. Planis); activation must be balanced, it should preserve traditional and natural character of the landscape (vegetation paths, settlements, agricultural surfaces) (map 4).

5. To consider new activities that can contribute to island competitiveness, starting with the existing tendencies in new purposes, making sure that they are systematised and strategically directed

6. Intensifying agricultural production is essential for island development, but should be focused on the least fragile areas (map 3) and conducted with vision and in accordance with landscape characteristics (intensified agriculture implies abandoning traditional structures of space impact and can incorporate: building new farms based on merging of the territory and ploughing of karst/land, including necessary infrastructure, enabling access to mechanization, building new or revitalizing existing facilities in agricultural or residential function, etc.)

7. Beach use should be re-evaluated from various points of view, because they shouldn't be only the final point - gravel and sea, but integrated into the structure (rural complexes that can be supply centres, ambient paths and hinterland, etc.)

Specific measures for the management of landscape

MEASURE - PASTURE 1 – To upgrade pastures through multifunctionality; to use existing resources, agricultural sinkholes, puddles, wood exploitation.

MEASURE - PASTURE 2 – To adequately represent pastures through exceptional landscape branding; to represent them through the monographs and the Internet; mark them in space. It is equally important to create detailed inventory and analysis, to determine the fund of condition of pastures, as well as accompanying elements with emphasis on recognizable traditional elements.

MEASURE - PASTURE 3 – Special attention should be given to systematic removal and/or management of juniper (*Juniperus oxycedrus L.*), which would develop a set of forest measures or measures for its use as a resource, primarily in a form of wood supplies. Considering the fact that this plant can grow up to 7 m, the topping measure *(pedalenje)* should also be considered; younger branches can be used for distilling and healthy oil production. In any case, it is essential to provide resources to research economic and commercial potential of this plant that should result in recommendations.

MEASURE - OLIVE GROVE – Olive groves surrounding the town of Cres should be branded and improved through the concept of agricultural park, which is by definition an economic and managing concept of combined purpose of public green surfaces (town park) and town farm; transformation of production landscape into urban, traditional, economic and recreational landscape as a part of urban complex. Spatial plans should be based on physical integration of agrarian and urban zones wherein unity of these two zones should be achieved.

MEASURE - RURAL UNIT – To improve rural complexes in terms of transport connections, creation of additional activities that will justify their activation (e.g. beaches and camping sites on beaches below villages, artistic colonies, etc.) (map 4).

MEASURE - BEACHES 1 – To preserve coasts and beaches by creating an inventory of all the beaches, determining systems of beach visitations and isolating beaches that are susceptible and sensitive to changes and incorporation of new infrastructures.

MEASURE - BEACHES 2 – To regulate or prohibit construction and beach filling within a wide coastal belt - to take into consideration alternative solutions like "pile-dwelling beaches" (map 4 suggests parts of the coast that are susceptible to non-invasive spatial interventions)

MEASURE - CAMPING SITE 1 – To strategically

determine potential locations/areas for building camping sites in order to connect them with adjacent neighbouring villages and rural complexes that can be revitalized, not just as supply centres for the camping sites (map 4 suggests these areas)

MEASURE - CAMPING SITE 2 – Construction of camping sites should be in accordance with morphological and structural characteristics of the landscape; it adapts to the incline, without excavating or filling the terrain. Existing stone dry wall structure is the basis for organization of new areas, minimal changes are possible.

MEASURE - INTENSIVE AGRICULTURE 1 – To direct intensive agriculture towards specific areas; map 4 delineates suggested areas

MEASURE - INTENSIVE AGRICULTURE 2 – New spatial interventions must be controlled and spatially non-invasive; new parcel must blend into morphology and structure of the landscape in a way that it follows existing structures of parcellation, sinkholes, etc. New merged lot doesn't imply removal of all the inner dry wall structures; small dry walls and piles, dry walls parallel to the terrain incline, and dry walls that have minimal functions (e.g. smaller fence dry walls) are removed. Massive inner and outer piles and under walls, dry walls enclosing paths, recognizable dry wall structures (steps, cisterns, shelters, etc.) are not to be removed. If the merging is significant, it is necessary to incorporate enclosures within the structure, or plan a new parcel in a way that it combines various sorts, cultures, cultivation manners, etc. Merging of bigger dimensions should not be followed by monotonous image of one sort or one cultivation manner.

MEASURE - INTENSIVE AGRICULTURE 3 – On the terrain that wasn't traditionally agriculturally cultivated, it is essential to follow slope characteristics, relief forms and soil accumulation (e.g. cultivating alluvial soil in torrents and slopes must be terraced, while cultivation within depressions must be followed by dry wall enclosures).

MEASURE - INTENSIVE AGRICULTURE 4 – To explore the potential of fertile sinkholes scattered among pastures, which can be used for vegetable growth; intensive agriculture within extensive sinkholes.

MEASURE - CONSTRUCTION 1 – To create catalogues of construction types for new agricultural facilities within new farms (e.g., three categories: from the most sensitive areas of the landscape to the least fragile areas)

MEASURE - CONSTRUCTION 2 – To define measures of revitalization of existing traditional facilities, especially shepherds' dwellings.

MEASURE - COMMUNICATION 1 – To use revitalization of the existing paths to improve traffic and pedestrian connections of remote rural complexes, areas of abandoned agricultural surfaces (stretch Grmov - Mali Podol, Valun bay stretch, etc.) and beaches (those that are strategically oriented). Communication improvements must be blended into ambiance and must contribute to the attractiveness of the landscape, i.e. preservation of historical and traditional character (e.g. in case of roads to preserve existing dry wall boundaries, i.e., in extensions, use existing dry walls, asphalt some of them, or firm existing asphalt layer). To reflect upon new alternative routes for networking of the exceptional landscapes and valuable landscapes (map 4).

MEASURE - COMMUNICATION 2 – Systematic inventory and analysis of pedestrian communications/paths and implementation of movement study; define points of vegetation removal to reveal views, define potentials for recreational paths.

5.4. Appendix - Map interpretation

MAP 1 - Overview map of landscape units and areas

MAP 2 - Landscape assessment map depicts cultural-historical and natural values of the landscape, and visual exposure thereof. Assessment of cultural-historical value of the landscape implies integrity of cultural-historical elements of a certain area, based on which it is possible to observe the capacity of the testimony of traditional culture in use and management of the land, settlements and its other cultural-historical features:

- Preservation of the traditional character of the landscape represented by its functional, structural and historical characteristics, where anthropogenic impact within space is integrated in a way that it rationally uses natural resources (water, soil, forest)

- Presence and/or preservation of singular traditional and other historical facilities and structures like shepherds' dwellings, sheepfolds (*mrgari*), traditional paths, etc.

- Presence and/or comprehensibility of traditional practices; management of forests, pastures, etc.

Natural value of a landscape is based on a sense of naturalness, i.e., the subjective assessment of the force and recognisability of natural processes and elements and absence of anthropogenic impact. At the same time, it implies presence of a natural landscape element that significantly influences the landscape character (recorded plant habitats, valuable resources of soil, water, etc.)

Visual exposure of the landscape - recorded points that reveal various vistas

MAP 3 - Problem map represents assessment of spatial problems and trends: level of natural succession, preservation of rural complexes and settlement complexes, preservation of the buildings within the settlement, spatial trends and interventions with their characters and protected areas

MAP 4 - Landscape sensitivity map with suggested management regime

By overlaying the evaluation system and the problem map we estimated sensitivity of landscape, represented in a 1-4 scale. Higher sensitivity suggests strict management regime, while less sensitive landscapes indicate mild regime and possibility of larger changes within the landscape. According to the sensitivity level, spatial potentials and tendencies, suggested management regimes are:

Category I - Exceptional landscapes - strict protection regime, with low level of possible impact with focus on preservation and revitalization of the landscape character; strict prohibition of construction, revitalisation and restoration of the existing facilities, preservation of the existing structure of land use and recognized valuable natural elements. Exceptional landscapes are: central and coastal pastures, Tramunatna and Predošćica, Osor with salt marshes, olive groves around the town of Cres, Lake Vrana

Category II - Valuable landscapes - moderate protection regime, with focus on improvement of the landscape character (significant agricultural revitalization measures, integration of new activities, provision of guidelines for new construction). Landscapes within this category are: coastal sides of Punta Križa and Valun bay, rural complexes with Gerbin bay and Dragozetići-Filozići and Planis

Category III - free regime of management that suggests new purposes and activities (changing the landscape character); depicts areas (relict structures or areas with already existing trend of intensified agriculture) that should be reactivated, but by implementation of contemporary agricultural measures. New construction requires provision of guidelines. These areas stand out: stepped dry stone walls (*barbakani*) east of Loznati and south of Lake Vrana and the central valley of Punta Križa

Coastal sides are articulated within two regimes; complete prohibition of spatial interventions and possible intervention according to provided guidelines (green). Suggested potential improvements of historical paths will contribute to accessibility of the area, preservation of historical/natural character and connecting of exceptional landscapes.

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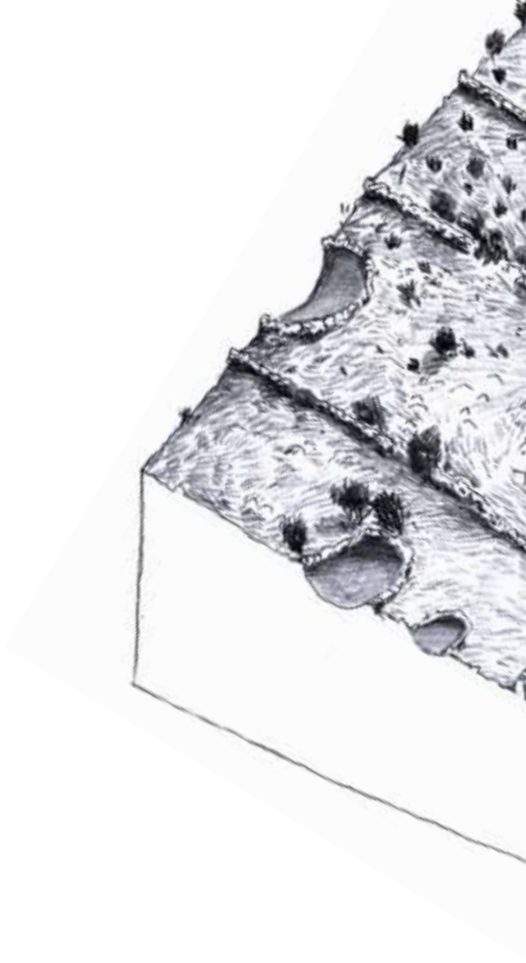

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